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Report to the Chairman and Ranking
Minority Member, Subcommittee on
Investigations and Oversight, Committee
on Public Works and Transportation,
House of Representatives

April 1989

WATER POLLUTION

Improved Monitoring and Enforcement Needed for Toxic Pollutants Entering Sewers



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**Resources, Community, and
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The Honorable Glenn M. Anderson,
Chairman
The Honorable William F. Clinger, Jr.
Ranking Minority Member
Subcommittee on Investigations and
Oversight
Committee on Public Works and Transportation
House of Representatives

In response to a request by the Subcommittee's former Chairman and by its Ranking Minority Member, we have assessed progress by the Environmental Protection Agency, the states, and publicly owned sewage treatment plants in implementing the Clean Water Act's National Industrial Pretreatment Program.

As arranged with your offices, unless you publicly announce its contents earlier, we will make no further distribution of this report until 30 days after the date of this letter. At that time, we will send copies to other appropriate congressional committees; the Administrator, Environmental Protection Agency; and the Director, Office of Management and Budget. We will also make copies available to other interested parties.

This work was performed under the direction of Richard L. Hembra, Director for Environmental Protection Issues. Other major contributors to this report are listed in appendix III.

A handwritten signature in cursive script that reads 'J. Dexter Peach'.

J. Dexter Peach
Assistant Comptroller General

Executive Summary

Purpose

The Clean Water Act seeks to reduce pollution of the nation's waters to assure that they may be used safely for a variety of purposes. A key strategy to meet the act's objectives is the National Pretreatment Program. Administered by the Environmental Protection Agency (EPA), the program requires industries discharging billions of gallons of toxic materials and other wastes into the nation's municipal sewage treatment facilities to "pretreat" their wastes prior to discharge. Pretreatment removes pollutants that may interfere with the treatment process, damage the facilities, or pass through the facility into receiving waters.

As requested by the former Chairman and the Ranking Minority Member, Subcommittee on Investigations and Oversight, House Committee on Public Works and Transportation, GAO assessed key elements of the pretreatment program, including whether (1) industrial discharges are exceeding program discharge limitations and (2) enforcement by treatment plants over dischargers and, in turn, oversight of treatment plants by EPA and the states, are sufficient to assure that discharge limitations and other program requirements are met.

Background

Under EPA's pretreatment program, treatment plants are required to comply with national standards that limit industries' ("industrial users") discharges into sewer systems. Treatment plants are also permitted to set additional local discharge limits to meet other environmental requirements and for other purposes.

All treatment plants designed to accommodate flows of more than 5 million gallons per day, and smaller plants under certain conditions, are required to establish pretreatment programs. These plants—about 1,500 nationwide—monitor industrial users' compliance with the standards by (1) requiring users to submit self-monitoring reports on their own wastewater discharges and/or (2) inspecting users and analyzing samples of their discharges. Treatment plants (or the local government entity controlling the plant, such as a sewage authority) may also take various enforcement actions when violations are detected. EPA has issued nonbinding guidance suggesting that such actions should initially include telephone calls and other informal contacts designed to encourage compliance but that they should involve fines and other penalties if compliance is not achieved. However, no national requirements exist as to the type or timing of enforcement for a given violation.

As "approval authorities," 25 states are responsible for overseeing treatment plants' implementation of pretreatment programs. EPA takes

this responsibility in the remaining states. Approval authorities seek to assure that treatment plants' monitoring and enforcement responsibilities are carried out and are authorized to take enforcement action against both treatment plants and industrial users if violations occur or remain uncorrected.

As part of its effort to assess the pretreatment program, GAO sent questionnaires to 502 treatment plants selected randomly from the approximately 1,500 plants participating in the national program.

Results in Brief

Industrial users were in considerable noncompliance with discharge limits under the pretreatment program. According to GAO's survey results, for example, sampling inspections by major treatment plants disclosed that about 41 percent of their industrial users exceeded one or more applicable discharge limits during the 12-month period examined. Among the effects of such violations have been (1) the pass-through of untreated toxic pollutants to receiving waters, (2) interference with treatment plant operations or damage to plant facilities, and (3) exposure of treatment plant workers to health and safety problems.

While EPA counts on treatment plants' enforcement programs to deter such violations, these plants have generally demonstrated a reluctance to take strong enforcement action when necessary. When they detect violations, treatment plants often limit their actions to telephone calls and warnings. If these actions do not achieve compliance, stiffer penalties (such as fines) are often not imposed.

Enforcement against noncomplying treatment plants by approval authorities has also been limited. EPA officials explained that until recently, their priorities have been on program start-up rather than enforcement against plants for failure to meet program requirements.

EPA has undertaken a number of initiatives recently to address some of these concerns, but their effectiveness is thus far unclear.

Principal Findings

Industrial Users Violated Discharge Limits

Based on responses to its questionnaire, GAO estimates that sampling inspections by the major treatment plants were conducted at about 18,000 industrial users over a 12-month period. Of these, about 41

percent exceeded one or more of their discharge limits. As another measure of compliance with discharge limits, GAO also asked treatment plants to identify the results of users' self-monitoring of their own discharges. Of an estimated 52,608 reports submitted, about 20 percent disclosed 1 or more violations with discharge limits.

Such violations led to a variety of adverse impacts during this period. Based on treatment plants' responses, (1) 20 percent experienced the pass-through of untreated pollutants to receiving waters, (2) 28 percent experienced interference with the treatment process (e.g., corrosion of pipes and other equipment), and (3) 4 percent experienced worker health and safety problems. EPA's regional pretreatment coordinators and GAO's case studies of selected treatment plants provided additional examples of adverse impacts from discharge limit violations. At one facility, a worker died from inhaling toxic fumes. At another plant, discharges disabled a treatment plant for several months, leading to continuous violations of the plant's discharge limits.

Enforcement Has Thus Far Been Limited

GAO's review suggests that the absence of aggressive enforcement by treatment plants against violators may be an important underlying cause for discharge limit violations. For example, while about 60 percent of plants with industrial users subject to certain standards served written notices of violation during the period, only 5 percent levied administrative fines. A February 1986 EPA study, together with GAO's interviews with EPA officials and its in-depth review of several pretreatment programs, indicate that such statistics often reflect a failure by plants to escalate enforcement when informal efforts do not succeed in correcting violations.

EPA officials acknowledged that, until 1988, program implementation was given more of a priority than enforcement. Without priority emphasis, a number of factors have made treatment plants reluctant to mount aggressive enforcement programs against noncomplying industrial users. Among them are the political difficulties treatment plants face in imposing sanctions against local industrial users that often employ local citizenry and pay a large share of the taxes that support local government and treatment plant operations.

Approval authorities' enforcement against noncomplying treatment plants has also been limited. Despite a 1988 EPA study disclosing that 48 percent of plants surveyed failed to carry out one or more of three major program objectives, EPA headquarters and regional officials

acknowledged to GAO that enforcement against such treatment plants has thus far been limited. Furthermore, EPA's Office of Water cited such oversight as an internal controls weakness that the Agency plans to address during fiscal year 1989. Here, too, EPA officials explained that, until recently, the priority of approval authorities has been on program start-up rather than enforcement.

Effectiveness of EPA Corrective Actions Unclear

Over the past few years, EPA has taken a number of actions to address some of the enforcement problems identified in GAO's review. The effectiveness of these actions, however, is thus far unclear. For example, to improve treatment plants' performance in enforcing against noncompliant industrial users, EPA provided guidance to plants in 1986 on what constitutes timely and appropriate action for various violations. However, this voluntary guidance has generally not been incorporated into previously approved plant programs. While it was reemphasized in the agency's fiscal year 1989 operating guidance, GAO's review suggests that local political pressures confronting plants, and other factors, may make their reluctance to take enforcement actions difficult to overcome.

Recommendations

In light of the problems with enforcement being experienced in the pretreatment program and uncertainties about the effectiveness of the corrective actions being undertaken by EPA, GAO recommends in chapter 3 that the Administrator, EPA, evaluate these actions at the end of fiscal year 1989 and take appropriate follow-up actions where necessary. Specifically, for those treatment plants that do not sufficiently incorporate existing guidance on enforcement response procedures into individual plant programs, GAO recommends that the Administrator require the use of EPA standards for timely and appropriate enforcement.

GAO makes a similar recommendation in that chapter to address problems in enforcement by approval authorities against noncomplying treatment plants and makes recommendations in chapter 4 to help assure that monitoring efforts detect discharge limit violations.

Agency Comments

GAO discussed its findings with EPA officials and has included their comments where appropriate. However, as agreed, GAO did not obtain official comments on a draft of this report.

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Abbreviations

EPA	Environmental Protection Agency
GAO	General Accounting Office
mgd	million gallons per day
NPDES	National Pollutant Discharge Elimination System
PASS	Pretreatment Audit Summary System
POTW	publicly owned treatment works
PPETS	Pretreatment Permit and Enforcement Tracking System
ppm	parts per million
PSES	Pretreatment Standards for Existing Sources
QNCR	Quarterly Noncompliance Report

Introduction

The nation's sewers collect the flow of used water from homes, commercial establishments, and industry and transport it to a sewage treatment plant called a "publicly owned treatment works" (POTW). Once the treatment process is completed, the treated water is discharged into a river, lake, or ocean. Wastewater entering a POTW may contain large quantities of toxic metals and organic chemicals discharged by industrial facilities. However, since POTW plants are generally not designed to treat these substances, some of this toxic pollution passes through the treatment plant and into receiving waters. Indeed, the Environmental Protection Agency (EPA) estimates that about 37 percent of the toxic industrial compounds entering the nation's waters and estuaries pass from industry through POTWs.¹

These toxic discharges pose serious threats to aquatic life and to those who swim in or consume fish or shellfish from these waters. In addition, there have been instances where these discharges have injured or killed sewer system workers and treatment plant operators, interfered with the wastewater treatment process, caused physical damage to the POTW, and contaminated sewage sludge generated by the POTW.²

To address the problems posed by industrial discharges to public sewer systems, the 1972 Federal Water Pollution Control Act Amendments (commonly called the Clean Water Act) established the National Pretreatment Program. The program, administered at the federal level by EPA, required industries discharging wastewater into POTWs to clean up, or "pretreat," their wastewater. Specifically, the program's objectives are to prevent

- interference with POTW operations resulting from discharge of pollutants the system cannot treat,
- pass-through of untreated pollutants into receiving waters,
- contamination of sewage sludge to the extent that various disposal options are either ruled out or become more expensive, and
- exposure of POTW workers to chemical hazards.

¹EPA. *Environmental Regulations and Technology: The National Pretreatment Program* (Washington, D.C.: July 1986), p. 4.

²Sewage sludge, the solid matter extracted from wastewater during treatment, must be landfilled, incinerated, or disposed of in some other way. Contamination of this sludge can make its disposal substantially more complicated and expensive.

In 1977, the Clean Water Act was amended to provide additional regulation of toxic and nonconventional pollutants from specific industrial categories. A list of 65 classes of toxic "priority pollutants" and 21 primary industrial categories to be regulated by EPA were included in the 1977 amendments. The list currently includes 126 toxic priority pollutants and 34 primary industrial categories. Controlling the substances on EPA's list of toxic priority pollutants is presently the primary emphasis of the National Pretreatment Program.

While the pretreatment program was created by law in 1972, POTWs were not required to have EPA-approved pretreatment programs until July 1, 1983. Implementing regulations were not issued by EPA until June 1978, and then implementation of amendments to those regulations was delayed by a Presidential freeze on new regulations.

Regulatory Approach of the National Pretreatment Program

The objectives of the pretreatment program are met mainly by regulating nondomestic users of POTWs (commercial and industrial facilities) that discharge toxic wastes or unusually strong conventional wastes. Allowable discharges from these facilities are regulated under the program through (1) federal standards prohibiting certain discharges, (2) national categorical standards, and (3) local discharge limits.

Prohibited Discharge Standards

EPA's prohibited discharge standards are both general and specific. There is a general prohibition against the introduction of pollutants into a POTW by a nondomestic source that pass through or interfere with the operation or performance of the POTW. There are also specific prohibitions against the introduction of pollutants into a POTW that will

- cause a fire or explosion hazard,
- cause corrosive structural damage to the POTW,
- obstruct the flow in the POTW,
- cause interference by the flow rate and/or pollutant concentration of any pollutant, and
- cause the temperature at the treatment plant to exceed 104 degrees Fahrenheit.

Prohibited discharge standards apply to all of the estimated 130,000 nondomestic users of POTWs, which range from small dischargers such as gas stations and restaurants to large industrial facilities.

Categorical Standards

In addition to the prohibited discharge standards that are applicable to all commercial and industrial facilities, categorical standards apply to industrial users of POTWs in specific industrial categories. Each categorical pretreatment standard contains limitations for some—but not all—pollutants commonly discharged by the specific industrial category. Federal standards for the 34 categorical industries have been promulgated. Compliance with the standard for the organic chemicals and plastics and synthetic fibers industry is not required until 1990. The categorical pretreatment standard for the pesticides industry was issued in 1985 but was withdrawn in 1986. EPA now plans to reissue the standard by 1992. The Office of Technology Assessment estimated in 1987 that there are between 14,000 and 16,000 indirect dischargers in industries covered by categorical standards. A list of industrial categories subject to national pretreatment standards is contained in appendix I.

Local Limits

Individual POTWs are also permitted to set local discharge limits. These local limits may be imposed to implement the general and specific discharge prohibitions and to address state and local regulations. For example, a POTW may need to impose local limits on specific pollutants in order to comply with federal or state sludge management regulations, or meet federal or state water quality criteria covering the body of water into which the POTW discharges. Local limits may make discharge limits for pollutants covered by categorical standards more stringent or they may address pollutants that are not covered by any of the categorical standards.

Organization and Scope of the Pretreatment Program

The pretreatment regulations require that as a condition of its National Pollutant Discharge Elimination System (NPDES) permit, a POTW (or combination of POTWs operated by the same authority) must establish a pretreatment program if (1) it is designed to treat more than 5 million gallons of wastewater per day (mgd) and (2) it receives from industrial users pollutants which pass through or interfere with its operation or are otherwise subject to pretreatment standards.³ POTWs with design flows of less than 5 mgd may also be required to establish a pretreatment program if nondomestic waste causes upsets at the treatment plant,

³The Clean Water Act requires that all POTWs discharging into U.S. waters obtain a NPDES permit. These permits limit the amount and concentration of specific pollutants a POTW may discharge into a body of water. They also require the POTW to monitor its discharge for compliance with those limits and report the results of that monitoring to the state or EPA regional office, depending on which agency is administering the NPDES permit program.

sludge contamination, violations of NPDES permit conditions, or if their industrial users are subject to national pretreatment standards.

About 1,500 of the nation's 15,000 POTWs are required to have federally approved pretreatment programs. EPA estimated in 1986 that these POTWs accounted for

- 74 percent of total flow through POTWs nationwide,
- 82 percent of industrial flow through POTWs,
- more than 90 percent of wastewater from industries subject to national categorical pretreatment standards, and
- 75 percent of all sewage sludge generated nationwide.

The Clean Water Act assigned the primary responsibility for enforcing national pretreatment standards to the local government's POTW, while making EPA or the state responsible for assuring that the local government fulfills this obligation. According to EPA, the decision to require POTWs to develop enforcement authority for the pretreatment program, and to take enforcement action as appropriate, was based on several factors: (1) POTW officials are familiar with their industrial users and they may already have mechanisms to regulate them, such as permits or contracts; (2) the POTW is in the best position to understand and to correct problems within its own treatment systems; and (3) the POTW is the logical responsible party to respond to emergencies in the treatment system, since it can quickly pinpoint the cause of the problem and take corrective action.

There are three organizational levels within the pretreatment program: the approval authority, the control authority, and the industrial user. The approval authority coordinates program development at the local level, reviews and approves or disapproves programs submitted by the control authority, and provides oversight to ongoing programs through inspections and review of required reports. The approval authority may be either the state or the EPA regional office. Presently, 25 states have accepted delegation of the National Pretreatment Program and serve as approval authorities.

The control authority is normally the POTW, although five states—Alabama, Connecticut, Mississippi, Nebraska, and Vermont—have elected to direct the program at the state level. The control authority surveys its industrial users and determines which should be regulated under its pretreatment program. In addition to users subject to federal categorical

standards (categorical users), the control authority must apply local limits to other users if it believes they are necessary to (1) protect the operation of the treatment plant or (2) assure that the plant will comply with the NPDES permit and sludge disposal requirements. Those users in this category that are considered to be significant dischargers by the POTW are designated as "significant noncategorical users."

The control authority must also (1) issue a permit (or enter into some form of contractual agreement) containing categorical and/or local limits to each significant industrial user, (2) monitor compliance with those limits through analyses of samples of the industrial user's discharges and/or through a review of self-monitoring reports prepared by the industrial user, and (3) take enforcement actions where there is noncompliance. The control authority also submits reports to the approval authority as required.

The industrial user must take whatever action is necessary to comply with federal categorical standards and/or local limits, including the installation of pretreatment systems and the adoption of adequate operation and maintenance procedures. Industrial users must also sample and analyze their waste stream and submit reports on the results of that sampling and analysis as required by the control authority.

Health Risks and Other Adverse Impacts Posed by Priority Toxic Pollutants

The pretreatment program's primary emphasis is on controlling the 126 priority toxic pollutants listed under the Clean Water Act. These pollutants fall basically into two categories: metals and organic chemicals. Beyond a substance's inherent toxicity, its impact depends on its concentration and the duration of exposure, whether the exposure was direct or indirect, and other factors.

Metals—including lead, mercury, chromium, and cadmium—are chemical elements and as such cannot be destroyed or broken down through treatment or environmental degradation. Toxic metals are capable of causing a variety of human health problems, including lead poisoning and cancer.

Consumption of contaminated seafood is a major route of human exposure to metals. For example, cadmium, a metal used extensively in electroplating (one of the largest industrial groups subject to federal categorical pretreatment standards) has caused significant contamination of the marine food chain in the Hudson River estuary. Studies of the Hudson River estuary have found that even moderate consumption of

shellfish could lead to exposure to cadmium exceeding recommended safe levels. In addition, metal contamination of other food sources has also occurred. These include dietary transport of lead and cadmium from the application of sewage sludge to agricultural lands.

Toxic organic chemicals—including pesticides, solvents, PCBs, and dioxins—are cancer-causing substances and can also produce other serious health problems, including kidney and liver damage, anemia, and heart failure. Numerous estuarine and coastal areas are sufficiently contaminated with toxic chemicals to preclude the harvest of fish and/or shellfish.

In addition to these health-related effects, EPA's Domestic Sewage Study identified other potential problems:⁴

- Sludge contamination can occur if industrial users fail to remove pollutants of concern from their discharges. As a result, the municipality may be limited in its disposal options or face increased disposal costs.
- Air pollution can result from volatilization of toxic chemicals in the POTW collection system or at the treatment plant, or through incineration of sewage sludge.
- Worker health and safety can be jeopardized by industrial discharges that result in explosions and worker exposure to toxics in the wastewater, fumes, or sludge.
- Industrial discharges may corrode pipes and other POTW equipment or cause other problems that adversely affect POTW operations.
- Groundwater pollution may occur if sewage leaks from the collection system or pollutants leach from sewage sludge that has been disposed of on land.

Objectives, Scope, and Methodology

In their July 23, 1987, letter, the former Chairman and the Ranking Minority Member, Subcommittee on Investigations and Oversight, House Committee on Public Works and Transportation, acknowledged that while progress had been made toward establishing national and local pretreatment standards and programs, there was concern over whether the effectiveness of the National Pretreatment Program was being compromised by inadequate compliance monitoring and enforcement. In discussions with their offices, we agreed to examine whether

⁴EPA. Report to Congress on the Discharge of Hazardous Wastes to Publicly Owned Treatment Works (Washington, D.C.: Feb. 1986).

- industrial discharges into municipal sewage treatment plants are exceeding discharge limitations;
- POTW enforcement over industrial users and, in turn, oversight of POTWs by EPA and the states, are sufficient to assure that discharge limits and other program requirements are met; and
- compliance monitoring is adequate to assure that violations of discharge limitations are not going undetected.

In addressing these issues, we relied primarily on the following information sources:

- A stratified random survey of POTWs (projectable to the 1,500 POTWs nationwide having approved pretreatment programs) was conducted to obtain a broad range of information about their pretreatment programs.⁵
- An in-depth analysis of six POTW pretreatment programs was undertaken in order to obtain further insights into POTW program structure, performance, compliance problems, and other issues. Our selection included large and small POTWs, four with state oversight and two with EPA oversight.⁶
- Interviews were conducted with state officials (primarily from the four states in which the POTWs with state oversight selected for review were located) and EPA headquarters and regional officials to confirm our findings and to obtain further information about the pretreatment program. The EPA contacts included interviews with each of the 10 EPA regional pretreatment coordinators. Additional perspectives were obtained from analyses prepared by selected public interest groups and other organizations.
- EPA evaluations, program guidance, and reports were reviewed; some of these reflect information from the Agency's Pretreatment Permit and Enforcement Tracking System (PPETS) and the Pretreatment Audit Summary System (PASS). Other EPA reports examined included documents

⁵The survey was stratified based on the amount of flow through the treatment plant. All such surveys are subject to sampling error. The sampling error is the maximum amount by which results obtained from a statistical sample can be expected to differ from the true value we are estimating. At the 95 percent confidence level, this means that the chances are 19 out of 20 that if we surveyed all POTWs, the results would differ from the estimates we obtained by less than the sampling error of these estimates. All sampling errors for the estimates in this report (which appear in parentheses following the estimates) were calculated at the 95-percent confidence level.

⁶The POTWs are located in Wilmington, Delaware; Albany, Georgia; Little Ferry, New Jersey; Dayton, Ohio; Bristol, Rhode Island; and Fort Worth, Texas. Case study analyses cover the 12-month period ending March 31, 1988. As part of this assessment, we reviewed the records of selected industrial users at each POTW. If the POTW had 20 or fewer industrial users, we included all of them in our review. If there were more than 20 industrial users, we randomly selected 20.

prepared by the Agency's Office of Water pursuant to the Federal Manager's Financial Integrity Act, which cited certain internal controls weaknesses in the pretreatment program.⁷

To address the first objective, our questionnaire asked POTWs to identify the number of industrial users at which sampling inspections were conducted and the number of users at which discharge limit violations were detected. Similarly, we asked them to identify the number of self-monitoring reports submitted by industrial users and the number of those reports that disclosed discharge limit violations. Further insights into the nature, extent, and environmental impacts of the violations were obtained through other questionnaire responses, from our six case study POTWs and from our interviews with EPA pretreatment coordinators.

To respond to our second objective, we examined both (1) POTW enforcement actions against industrial user violators and (2) EPA and state enforcement actions against POTWs. To address the first part of this objective, we asked POTW questionnaire respondents to identify the enforcement tools available to them, and the number and type of actions taken against violators. We obtained additional insights on (1) the adequacy of POTW enforcement policies; (2) the appropriateness of their enforcement actions; and (3) reasons for POTWs' enforcement problems through reviews of EPA studies, interviews with EPA officials, and analyses of the case-study POTWs.

To better understand the extent of compliance monitoring of POTWs by the approval authorities, we interviewed EPA headquarters and regional officials. EPA interviews were also useful in identifying and understanding recent initiatives undertaken by the Agency designed to improve oversight of POTWs.

To address the last objective, we used our questionnaire to examine the extent to which (1) POTWs performed required sampling inspections and (2) industrial users submitted required self-monitoring reports. Beyond assessing compliance with these regulations, we relied upon our EPA and state interviews, case studies, and additional questionnaire responses to identify other problems that might allow violations to go undetected.

⁷The act requires agencies to report "material weaknesses" in programs' internal controls to the President and the Congress. As part of this requirement, organizational units within EPA—in this case, the Office of Water—first report issues they deem to be material weaknesses to the Agency's Office of Administration and Resources Management.

Chapter 1
Introduction

Our work was conducted between September 1987 and October 1988, with updates through February 1989, in accordance with generally accepted government auditing standards. The views of EPA officials responsible for the pretreatment program were sought during our review, and their comments have been incorporated where appropriate. In accordance with the wishes of the requesters' offices, however, we did not solicit formal comments from EPA on a draft of this report.

Industrial Users of POTWs Violated Discharge Limits

The success of a POTW's pretreatment program depends on compliance by its significant industrial users (all categorical industrial users and noncategorical industrial users designated "significant" by the POTW) with national and local discharge limits. Therefore, an important component of any POTW's program involves monitoring its significant industrial users in order to make these compliance determinations. Monitoring requires that samples of industrial user discharges be taken and analyzed to determine whether discharge limits for specific pollutants are met or exceeded. In some cases, this sampling and analysis is performed by the POTW (sampling inspections) and in other cases these activities are carried out by the industrial user (self-monitoring) and the results are reported to the POTW. It is the POTW that decides (1) the monitoring roles of the POTW and its industrial users and (2) how often industrial users' discharges should be monitored and for what pollutants. In addition, federal pretreatment regulations require that (1) all categorical industries report at least twice a year to the appropriate control authority on compliance with national discharge limits and (2) if sampling data indicate a violation, the industrial user must repeat the sampling and analysis and report the results to the control authority within 30 days.

According to POTW questionnaire responses, both POTW sampling and industrial user self-monitoring identified considerable noncompliance by significant industrial users with national and local discharge limits during the 12-month period examined. As a result, more-than-allowable levels of toxic and conventional pollutants reached receiving waters, and other adverse impacts occurred as well.

The data discussed in this chapter cover only the results of required POTW sampling inspections that were performed and industrial user self-monitoring reports that were submitted as required. The extent to which our review disclosed that required monitoring was not being done, as well as other factors that we believe affect the ability of the monitoring program to identify discharge limit violations, are discussed in chapter 4.

Extent and Significance of the Discharge Limit Violations

To determine the extent of discharge limit violations by industrial users, we sent a questionnaire in June 1988 to a stratified random sample of 502 of the approximately 1,500 POTWs required to have pretreatment programs. We requested information on the results of discharge monitoring for the 12-month period ending March 31, 1988, or the most recently completed 12-month period for which the industrial users submitted reports to their approval authority. A total of 428 POTWs (85 percent) responded to the questionnaire, although response rates to individual questions varied.¹ These 428 POTWs are representative of the 1,188 POTWs with pretreatment programs that we estimate would have responded to this question had we queried all 1,500 POTWs with pretreatment programs.

Based on the POTW responses, we estimated that about 41 (± 2) percent of the industrial users covered by POTW sampling inspections at 18,001 ($\pm 1,155$) categorical and significant noncategorical industrial users exceeded 1 or more of the discharge limits. As another measure of the extent to which discharge limits were violated, we asked respondents to identify how many self-monitoring reports submitted to them by industrial users identified discharge limit exceedences. From their responses, we estimated that for the 52,608 ($\pm 4,852$) discharge monitoring reports submitted to the POTWs by industrial users during the 12-month period, about 20 (± 3) percent disclosed that 1 or more of the discharge limits were exceeded by the reporting industrial user.

To better understand the significance of these violations, we (1) asked questionnaire respondents how many industrial users appeared on annual published lists of "significant industrial user violators," (2) examined the record of violations at our six case study POTWs, and (3) asked questionnaire respondents to identify observed adverse impacts resulting from industrial users violating their discharge limits. We also obtained examples of other adverse impacts of discharge limit violations through discussions with EPA's 10 regional pretreatment coordinators. In general, we found that these violations were significant enough in many cases to cause observable adverse environmental impacts.

¹Not all POTWs surveyed provided data on the extent of discharge limit violations. As a result, the projected universe for this question is smaller than the 1,500 POTWs with pretreatment programs. Similarly, the universe of POTWs in other projections in this report varies according to the number of POTWs responding to each question.

POTWs Identified Certain Violators as Significant

The pretreatment regulations require POTWs to publish an annual list of significant industrial user violators in the local newspaper with the greatest circulation. The regulations define a significant violation as a violation that (1) remains uncorrected 45 days after notification of non-compliance, (2) is part of a pattern of noncompliance over a 12-month period, (3) involves a failure to accurately report noncompliance, or (4) resulted in the POTW exercising its emergency authority under the pretreatment regulations.

We asked POTWs to identify whether they published an annual list of significant industrial user violators during the 12-month period covered by their questionnaire responses. Based on their responses, we estimate that about 35 (± 4) percent of POTWs had published a list of significant industrial user violators during the period, and that these lists contained a total of 1,998 (± 385) categorical and significant noncategorical industrial users. About 92 (± 2) percent of the 1,998 industrial users were included on the lists for exceeding discharge limitations. The remaining industrial users were included on the lists for reasons such as not meeting reporting requirements or failing to meet compliance schedule milestones.

Several EPA regional pretreatment coordinators told us that the number of significant industrial user violators included in published lists is probably understated because they do not believe all POTWs who should be publishing the annual list. One of these coordinators estimated that about half of the POTWs in his region that should be publishing a list are not doing so. Among the reasons put forward by the EPA pretreatment coordinators to account for POTWs' reluctance to publish the annual list:

- Some POTWs believe there is potential liability on their part if they were to publicize the name of a violator, and the discharge limit violated was later challenged as not being based on sound technical analysis.
- Some POTWs believe publishing the list makes industrial users less cooperative, since it may be published after the industrial user has agreed to take corrective action.
- Some POTWs do not believe they could prove that some violations are "significant," as defined by the pretreatment regulations.

Discharge Limit Violations in GAO's Six Case Studies

To supplement our survey results, we reviewed the level of discharge limit violations at our six case study POTW pretreatment programs: Wilmington, Delaware; Albany, Georgia; Bergen County Utilities Authority, Little Ferry, New Jersey; Dayton, Ohio; Bristol, Rhode Island; and Fort

Worth, Texas. At each of the POTWs, we compared permit discharge limitations for 20 randomly selected industrial users (except at Bristol, where all 12 industrial users were selected) with the results of POTW monitoring and industrial user self-monitoring for the year ended March 31, 1988.

At four of the six POTWs, the majority of the industrial users reviewed exceeded at least one discharge limit during the 12-month period. As another indicator of the frequency of violations, individual pollutant analyses by the six POTWs and their industrial users disclosed that discharge limits were exceeded during this period in from 3 to 15 percent of the analyses made for selected industrial users at the six POTWs.

Of the six POTWs, the Bergen County Utilities Authority experienced the most noncompliance by industrial users with discharge limits. Our comparison of permit discharge limitations with monitoring results at Bergen County showed that 17 of 20 industrial users exceeded at least one permit limitation. These violations involved various pollutants, including cyanide. Further, 110 of the 742 individual pollutant analyses made for these 20 industrial users (or 15 percent) exceeded the discharge limitation. Of the 110 analyses that disclosed violations,

- 33 (30 percent) showed limits were exceeded by up to 100 percent;
- 48 (44 percent) showed limits were exceeded by 101 to 500 percent;
- 11 (10 percent) showed limits were exceeded by 501 to 1,000 percent; and
- 18 (16 percent) showed limits were exceeded by more than 1,000 percent.

Of the approximately 280 industrial users in its system, Bergen County identified 16 and 15 industrial users, respectively, that appeared on the annual published list of significant violators of pretreatment discharge limits for calendar years 1986 and 1987. Ten industrial users on the 1987 list also appeared on the list published for 1986, indicating that some industrial users are significant violators for extended periods of time.

At the other extreme, records at the Wilmington POTW indicate that only 3 percent of the analyses performed during the 12-month period disclosed discharge limit violations. This level of compliance may be somewhat misleading, however, for three reasons. First, according to the manager of the pretreatment program in Newcastle County, Delaware (a customer of the Wilmington POTW), as many as 9 of the 20 industrial

users covered by our review may be subject to the federal categorical standard for the organic chemical industry. While these standards were promulgated by EPA in 1987, industrial users have until 1990 to reach compliance. Consequently, these discharge limits are not included in existing industrial user permits at the Wilmington POTW, and there are no interim local limits. Second, two industrial users in noncompliance with the local limit for nickel since the pretreatment program began were given variances by Wilmington and are not reported in noncompliance. Third, no analyses were done during our review period at 4 of the 20 industrial users.

Adverse Environmental Impacts Cited by Survey Respondents

Observed adverse environmental impacts are another indication of the significance of discharge limit violations. Some respondents identified a number of adverse impacts that occurred from such violations during the 12-month period. Based on these responses, we estimated that 43 (±5) percent of the POTWs had at least one adverse impact resulting from industrial users' discharge limit violations.

Through the questionnaire, we asked POTWs about how frequently, if at all, certain adverse effects occurred as a result of industrial users exceeding their discharge limitations. Based on these responses, we estimate that of the projected respondents, (1) about 30 (±4) percent experienced at least one instance where their facility exceeded NPDES permit limits, (2) 28 (±4) percent experienced at least one instance of treatment plant inhibition/upset, and (3) about 20 (±4) percent experienced at least one instance of pass-through of pollutants into receiving waters. Table 2.1 summarizes the response to these questions.

Table 2.1: Types of Adverse Impacts From Industrial Users Exceeding Discharge Limits (March 31, 1987 Through March 31, 1988 or Most Recent 12-Month Reporting Period)

	Estimated percent of POTWs ^a indicating an adverse impact			
	Overall	1-2 times	3-4 times	5 times or more
Pass-through of pollutants	20 (±4)	10 (±3)	5 (±2)	6 (±2)
Sludge contamination	10 (±3)	4 (±2)	1 (±.8)	4 (±2)
Plant inhibition/upset	28 (±4)	18 (±4)	5 (±2)	5 (±2)
Health or safety problems for POTW workers	4 (±2)	3 (±1)	1 (±.8)	^b
POTW exceeded its NPDES permit limits	30 (±4)	14 (±3)	6 (±2)	11 (±3)

^aFor each of the adverse impacts listed, about 2-3 percent of the POTWs did not provide an answer

^bThis estimate is not reported because of the size of the sampling error

EPA's regional pretreatment coordinators provided some additional insights as to the specific adverse impacts resulting from discharge limit violations by industrial users, including the following:

- At the Gloucester County Utilities Authority in New Jersey, one worker died from inhaling toxic fumes at the POTW plant.
- At the Bergen County Utilities Authority in New Jersey, industrial user discharges disabled the treatment plant for several months during 1988. Continuous violation of the POTW's NPDES permit limits ensued.
- In Salt Lake City, Utah, high levels of copper discharged by an industrial user reduced the life expectancy of the POTW's sludge disposal site by 66 percent. As a result, the city will have to find a new disposal site and may face increased disposal costs.
- In Orlando, Florida, excessive levels of chromium discharged by an industrial user disabled the treatment process for more than one week. Consequently, millions of gallons of sewage entered receiving waters untreated.
- In La Crosse, Wisconsin, a brewery discharged wastewater containing sulfuric acid and high pH, producing hydrogen sulfide. Significant damage to the city's sewer system ensued.
- In Rockford, Illinois, high cadmium content in sewage sludge resulted in the sludge being designated a hazardous waste for disposal purposes. This designation limits disposal options and increases disposal costs.
- In Easton, Pennsylvania, one industrial user discharged 400 parts per million (ppm) iron—20 times the local limit of 20 ppm. Numerous violations of the POTW's NPDES permit limits resulted.
- Delaware has decided to compost solid waste and the sewage sludge from the Wilmington treatment plant and apply it to land as a soil conditioner. Wilmington's sludge will not be acceptable for composting if its nickel content exceeds 600 ppm. At the time of our review, the sludge exceeded 1,300 ppm because two industrial users exceeded the local discharge limit for nickel.

In addition, according to the principal engineer at the Bergen County Utilities Authority, a number of industrial users consistently violated the discharge limit for cyanide and also discharged wastes with a low pH. One firm, we were informed, discharged wastes with 40, 50, or even 100 ppm of cyanide although the local limit is 0.5 ppm. The combination of high levels of cyanide and low pH can produce hydrogen cyanide, a deadly gas that poses a health threat to workers in the sewer system.

One EPA regional pretreatment coordinator also pointed out that inadequate pretreatment may result in impacts that either are not readily

observable or are not solely attributed to pretreatment problems. Such situations could arise, for example, where toxic pollution originates from multiple sources—only some of which involve industrial user discharges into POTWs.

Causes of Discharge Limit Violations

No single factor surfaced as the primary cause of discharge limit violations. Instead, EPA regional pretreatment coordinators suggested a number of factors that cause industrial users to exceed national categorical standards or local discharge limits. These factors primarily involved (1) the lack of pretreatment equipment and (2) the operation and maintenance of that equipment.

Regarding the first problem, pretreatment coordinators said that some industrial users have not purchased and installed needed pretreatment equipment. Others have purchased pretreatment equipment that is inadequate to treat the daily volumes of wastewater. Still others have not modified pretreatment equipment when the industrial processes it employs have changed.

In the area of operation and maintenance, some pretreatment coordinators and POTW officials said that some industrial users lack qualified personnel to operate their pretreatment equipment while others do not perform adequate maintenance. A related factor was that some industrial users may occasionally shut off their pretreatment systems to reduce costs.

Finally, one EPA regional pretreatment coordinator told us that some industrial users have inadequate spill prevention programs and, when spills occur, untreated wastes find their way into sewer drains and, ultimately, into the sewer system.

Conclusions

Many industrial users of POTWs have violated pretreatment program discharge limits. These violations have been significant enough in many cases to cause observable adverse impacts to water quality, worker safety, and the wastewater treatment system, in addition to causing physical damage to POTWs.

No single factor causes industrial users to violate discharge limits; however, the lack of adequate pretreatment equipment and inadequate operation and maintenance of pretreatment equipment are commonly cited as causal factors. As discussed in chapter 3, our work suggests that the

Chapter 2
Industrial Users of POTWs Violated
Discharge Limits

absence of aggressive enforcement by POTWs against industrial user violators may be an important underlying cause of the problem. Without such a program to serve as a deterrent to violations, industrial users have less incentive to assure that the proper equipment is installed and maintained, and that it is operated by trained personnel.

Effective Enforcement Against Violators Is Needed

An effective enforcement component is needed within the pretreatment program to serve as a deterrent to violations and, when violations occur, to assure that appropriate corrective action is taken in a timely manner. To help achieve compliance by industrial users, EPA has issued voluntary "guidance" suggesting that POTWs should have a range of enforcement actions available to them. These mechanisms may range from a simple telephone call to pursuing criminal penalties. The type of action to be taken depends on various factors, including how significant and long-standing the violations are, whether the violations were intentional, and how successful informal actions are in correcting them. However, no national requirements exist as to the type or timing of enforcement actions for a given violation. Rather, EPA regional offices and states serving as approval authorities in the pretreatment program are responsible for working with POTWs to assure that they have adequate enforcement components and that they are effectively implementing all aspects of the pretreatment program. EPA believes that the use of guidance, rather than formal national enforcement criteria, is consistent with the statute authorizing the program, which assigns the primary implementation role to the local level (i.e., the POTW and its sewage authority or other local government entity).

We found that POTWs with pretreatment programs issued thousands of oral and written notices to industrial users that had violated their discharge limits, but took far fewer formal enforcement actions, such as assessing fines and terminating service. In some cases, this situation could mean that informal actions resolved the problem and that formal enforcement actions were therefore unnecessary. However, when asked about this issue, EPA officials explained that, in many cases, they do not believe that POTWs are escalating enforcement when informal measures to correct violations are unsuccessful. These views were supported by a 1986 EPA report addressing the enforcement issue, as well as some of our six POTW case studies.

EPA headquarters and regional officials noted that enforcement in the pretreatment program was only recently given a high priority by EPA and the states serving as program approval authorities. The primary focus until then had been on issuing program guidance and regulations, and on training initiatives to help POTWs implement local programs. They noted that without an emphasis on enforcement, POTWs have not had an incentive to take strong enforcement action against violating industrial users. EPA is currently implementing two initiatives to make enforcement by POTWs against their industrial users more consistent.

Similarly, despite the availability of a variety of enforcement options, enforcement against noncompliant POTWs by approval authorities has thus far been limited because it had been a low priority. Here, too, EPA has initiatives underway to more systematically (1) identify POTWs in noncompliance with pretreatment program requirements and (2) encourage approval authorities to take appropriate enforcement actions against POTWs for failure to implement an approved program.

Enforcement by POTWs Needs to Be Strengthened

We asked the POTWs in our survey what types of enforcement tools were available to them and the frequency with which they applied these tools during the 12-month period covered by their response. The POTWs generally indicated that they had a wide range of enforcement tools available to them. For example:

- About 98 (± 1) percent can take informal actions, such as issuing oral or written notices of violation, or meeting with an industrial user to give it the opportunity to “show cause” why the POTW should not initiate formal action or discontinue sewer service.
- About 97 (± 2) percent can issue administrative orders placing industrial users on compliance schedules to meet pretreatment standards (e.g., schedules that require installation of needed equipment, or that require facilities to be properly operated and maintained).
- About 94 (± 2) percent can assess either fines or civil penalties.
- If the industrial user is unlikely to do what the POTW believes is necessary to achieve or maintain compliance, about 80 (± 4) percent can bring a civil suit for injunctive relief, asking the court to order a discharger to take or refrain from specific actions.
- About 93 (± 2) percent can terminate service to the industrial user.
- In the case of willful or negligent violations, about 68 (± 4) percent can seek criminal penalties.

Table 3.1 summarizes our estimates of the number of times that various enforcement actions were taken by POTWs against their categorical and significant noncategorical industrial users, during the 12-month period covered by their survey responses. The numbers in parentheses refer to the percentage of POTWs taking those actions.¹ The table indicates that

¹As noted in ch. 2, not all 428 POTWs responding to our questionnaire responded to all questions. Given the number of POTWs providing information on the questions in table 3.1, we estimate that 1,188 POTWs would have provided this information had we asked these questions of all 1,500 POTWs with pretreatment programs. The estimates in table 3.1 apply to these 1,188 POTWs. Of this total, 990 (± 56) serve categorical industrial users, and 994 (± 55) serve significant noncategorical industrial users.

POTWs issued 10,117 ($\pm 1,353$) verbal warnings and 16,848 ($\pm 2,973$) written notices of violation to their categorical and significant noncategorical industrial users. In contrast, they assessed 3,433 ($\pm 2,214$) administrative fines and 1,164 (± 130) civil penalties against their significant industrial users and terminated service 106 (± 78) times.

Table 3.1: Summary of Enforcement Actions Taken by POTWs

Enforcement actions	Times used (% of POTWs taking action)			
	Categorical industrial users ^a		Significant noncategorical industrial users ^b	
Informal actions				
Verbal warning	4,497	(51)	5,620	(51)
Written notice of violation	8,180	(64)	8,668	(61)
Show-cause hearing	271	(9)	109	(5)
Formal actions				
Compliance schedule	1,274	(40)	1,067	(33)
Permit revocation	42	(3)	•	(3)
Administrative fine	1,224	(5)	•	(5)
Civil penalties	603	(5)	561	(3)
Criminal penalties	53	(2)	23	(1)
Injunctive relief	23	(2)	•	(1)
Terminate service	49	(4)	•	(2)

^aOf the 1,188 POTWs, 990 serve categorical industrial users. The estimates in this column apply to these 990 POTWs.

^bOf the 1,188 POTWs, 994 serve significant noncategorical industrial users. The estimates in this column apply to those 994 POTWs.

• These estimates are not reported because the sampling errors were larger than the estimates. Appendix II contains sampling errors for all reported estimates.

In addition, table 3.1 indicates that formal enforcement actions were taken by a much smaller share of POTWs than informal actions. Regarding informal actions, for example, it shows that verbal warnings were issued by about 51 (± 5) percent of the 990 POTWs serving categorical industrial users, and about 51 (± 5) percent of the 994 POTWs serving noncategorical industrial users. An even larger share took another type of informal action, issuance of a written notice of violation (about 64 (± 5) percent categorical industrial users and 61 (± 5) percent noncategorical).

In contrast, of the 990 POTWs serving categorical industrial users, we estimate that about 5 (± 2) percent used administrative fines and about 5 (± 2) percent used civil penalties against such users. Similarly, of the 994 POTWs serving significant noncategorical industrial users, about 5

(± 2) percent used administrative fines and about 3 (± 1) percent used civil penalties.

EPA Officials
Acknowledge That POTWs
Need to Take Stronger
Enforcement Action

These enforcement statistics show that formal enforcement actions were taken far less frequently than informal actions. The statistics do not, however, show the extent to which informal actions were successful or unsuccessful in bringing about compliance and, therefore, the extent to which more formal action was warranted. Therefore, to better understand whether stronger enforcement by POTWs may be needed to bring about compliance with pretreatment standards, we reviewed a prior EPA evaluation of POTW enforcement and discussed the current status of POTW enforcement with EPA officials.

EPA's February 1986 Domestic Sewage Study, discussed in chapter 1, addressed the audits of 28 local pretreatment programs. With respect to enforcement, the report stated that half of those POTWs had developed adequate enforcement procedures, but few of the POTWs had established policies that dictate when and what type of enforcement actions are to be taken. Many had never taken formal enforcement actions, although in seven cases there had been serious violations. The report further stated that personnel from most of the POTWs that were audited expressed a reluctance to take any kind of formal action because it might affect their relations with the industrial community.

EPA headquarters and regional pretreatment officials told us that they continue to believe that POTWs need to take stronger enforcement actions. They stated that POTWs identify violating industrial users and that POTWs take initial enforcement action—issuance of verbal and/or written warnings. However, POTWs do not always escalate enforcement when these informal efforts are unsuccessful in correcting pretreatment program violations.

Case Studies Also Suggest
Improved POTW
Enforcement Is Needed

Our review of enforcement practices among the six POTWs we examined in detail also suggests that POTW enforcement needs to be improved. Specifically, we found that most of the POTWs lacked detailed enforcement procedures and that, in some cases, action was not being taken despite long-term violations of discharge limits by industrial users.

The Bergen County Utilities Authority, for example, was criticized for its enforcement program by New Jersey in its 1986 and 1987 audits of the authority's pretreatment program. For example, the 1987 report

pointed out that the authority (1) failed to escalate enforcement actions to bring about compliance, (2) did not take actions beyond verbal or written warnings, and (3) did not bring about compliance with the enforcement actions that it did take. Because of a perceived lack of compliance, the New Jersey Public Interest Research Group (an environmental organization) filed suit against one of the authority's industrial users. According to the research group, that firm was discharging levels of total metals averaging 3,130 percent in excess of permit limits. Four of the metals—chromium, nickel, cyanide, and lead—are classified by EPA as significant threats to human health.

The enforcement approach at the Bristol, Rhode Island; Albany, Georgia; and Wilmington, Delaware POTWs is to seek voluntary compliance from their industrial users. None of these industrial users have been fined, taken to court, or been subject to any other formal enforcement action. At Bristol, the town administrator believed it was more prudent to obtain the cooperation of its industry than to alienate it by escalating enforcement action, even though the town's major industry was repeatedly violating its discharge limits.

The experience of Albany's POTW with this type of voluntary approach demonstrates how time-consuming it can be. Albany notified one of its industrial users in May 1984 that it was in violation of the local limit for copper and directed it to bring its discharge into compliance. The city granted the company repeated extensions until the situation was finally corrected in June 1987, more than 3 years later.

Finding a similar reluctance to escalate enforcement in a timely fashion, a 1987 audit of the Wilmington program performed by EPA Region III called for better enforcement procedures. EPA recommended that Wilmington develop enforcement response guidelines outlining the level of enforcement action most appropriate for each type of violation and the maximum time frame for achieving compliance before escalation to the next level. Such guidelines, EPA pointed out, would put violating facilities on notice that returning to compliance cannot be delayed or put off.

In contrast, the Fort Worth authority and one of its customer cities took strong enforcement action against two of the industrial users in our sample that had repeatedly violated discharge limits. In one case, the city's attorney was drafting a complaint at the time of our review, requesting that the district court close down the industrial user. In the other case, the customer city suspended the industrial user's permit, disconnected sewer service, and placed the industrial user on a 90-day compliance

schedule. Neither of these actions, however, were taken until after extended periods of noncompliance. Before then, one of the industrial users informed the POTW's industrial waste supervisor that it was less costly to pay the fines for exceeding its discharge limits than to make the required improvements to its plant.

Of the six case study POTWs, Dayton was the only POTW to have specific pretreatment enforcement guidelines. The violation process had five levels, as follows:

- Level 1—courtesy letter,
- Level 2—violation letter,
- Level 3—violation letter with \$300 fee,
- Level 4—violation letter with \$500 fee, and
- Level 5—court action.

Each type of violation is initially assigned an enforcement level depending on its severity. For example, a Level 1 enforcement action is assigned to an exceedance of 1 to 25 percent over the discharge limit. A Level 2 action is assigned to an exceedance of 26 to 50 percent over the limit. In cases where a similar violation is repeated, the next higher step of enforcement would be used. Court actions would be used when other actions are not effective.

POTWs Are Reluctant to Take Strong Enforcement Action

When asked why POTW enforcement has been weak, EPA headquarters and regional pretreatment officials told us that until 1988, program implementation (e.g., identifying significant industrial users, issuing permits, and developing local limits) was given more priority than enforcement. Without that priority emphasis, they explained, POTWs were reluctant to mount an aggressive enforcement program against violating industrial users.

While past program priorities help to explain part of the POTW enforcement problem, our discussions with EPA and POTW officials indicate that the POTWs' role in the local community can make it politically difficult for them to take enforcement actions beyond seeking voluntary compliance. Specifically, we were told that industrial users often employ local citizenry and pay a large share of the taxes that support both local government and POTW operations. For these and other reasons, an industrial user may have influence over the affairs of both the local government and POTW operations. As a result, POTWs generally do not want to alienate

industrial users and are reluctant to appear as if they are harassing them.

In this connection, some POTW officials said that their role in the pretreatment program as a regulator of industrial users is a sharp departure from their traditional role in their communities. They said that POTWs traditionally consider themselves a service industry and are uncomfortable as regulators.

An April 1987 Office of Technology Assessment report adds another perspective on why POTWs may be reluctant to take enforcement action against noncompliant industrial users.² The report suggests that there is no linkage between the discharge limits in a POTW's NPDES permit and the toxic substances regulated under permits issued to industrial users that discharge into the POTW. In that regard, EPA estimates that less than 1 percent of POTW NPDES permits contain limits for toxic metals and organic chemicals. Therefore, if POTW operations are not hampered by industrial users, a POTW may not be prone to aggressively enforce industrial user discharge limits because such exceedances of those limits will not be likely to cause the POTW to violate its own NPDES permit.

EPA Is Taking Steps to
Make Enforcement by
POTWs Against Industrial
Users More Consistent

In response to problems over the adequacy and consistency of POTW enforcement, EPA plans to

- establish consistent enforcement priorities among POTWs by promulgating a regulatory definition for when an industrial user is deemed to be in "significant noncompliance" and therefore warranting priority attention and
- require POTWs to adopt detailed enforcement response procedures, including standards for timely and appropriate enforcement.

Some EPA officials believe that the lack of a regulatory definition of significant noncompliance has fostered inconsistencies among POTW enforcement activities. EPA headquarters guidance, issued in September 1986, considers an industrial user in significant noncompliance with discharge limits if, for example, 66 percent or more of the measurements (analyses of its wastewater) exceed the same daily maximum limit or the same average limit in a 6-month period. EPA Region VI, on the other hand, considers an industrial user in significant noncompliance if 20 percent or more of the wastewater samples collected during the past 12

²Office of Technology Assessment, Wastes in Marine Environments (Washington, D.C.: April 1987).

months contain one or more violations, as long as more than four samples were taken. Inconsistencies in this area can affect which industrial users are subject to an enforcement action; what one city considers a major violation, others may not. Industrial users have recognized these inconsistencies and, in some cases, complained to EPA and the states. Acknowledging this problem, EPA proposed a regulatory definition of significant noncompliance by industrial users in November 1988.

A second factor contributing to inconsistency in pretreatment program enforcement is the absence in many POTW programs of criteria as to what represents timely and appropriate enforcement. Without such criteria, EPA and the states cannot determine whether enforcement by POTWS is timely and appropriate. EPA provided enforcement response guidance to POTWS in September 1986 but most pretreatment programs were approved prior to then and, according to EPA headquarters and regional pretreatment officials, do not include details on enforcement response procedures. Our case studies confirmed this impression.

EPA recognizes as a problem the lack of detailed procedures among POTWS as to what represents timely and appropriate enforcement. In her fiscal year 1989 program guidance, EPA's Assistant Administrator for Water stated that POTWS must be accountable for identifying industrial user noncompliance and taking enforcement action within certain time frames. She pointed out that where approved programs do not specify detailed enforcement response procedures, they should be modified to make them consistent with the 1986 Pretreatment Compliance Monitoring and Enforcement Guidance. In addition, EPA proposed regulations in November 1988 that call for POTWS to develop enforcement response plans.

Oversight by Approval Authorities Has Thus Far Been Limited

EPA headquarters and regional officials acknowledged to us that enforcement against noncomplying POTWS (i.e., those POTWS not complying with their own enforcement responsibilities against industrial users, or which are out of compliance with other program requirements) has thus far been limited. The Agency is implementing initiatives to improve the identification of such POTWS and provide guidance on taking timely and appropriate enforcement action against them.

A December 1988 EPA study disclosed considerable noncompliance by POTWS with pretreatment program requirements. As part of the study, EPA assessed POTW pretreatment programs against the following criteria:

- Are more than 20 percent of a POTW's significant industrial users in non-compliance with pretreatment standards or reporting?
- Did the POTW inspect or sample less than 80 percent of its significant industrial users in the past year?
- Has the POTW failed to issue required control mechanisms to some of its significant industrial users?

The EPA study found that 48 percent of the 1,102 POTWs included in the study exceeded one or more of the above criteria, and 15 percent of the POTWs exceeded two or more of the criteria. Three percent of the POTWs exceeded all three of the criteria.

States with approved pretreatment programs—and in their absence, EPA regional offices—are required to oversee these POTW programs. Oversight consists primarily of annual pretreatment compliance inspections and 5-year audits conducted on-site at the POTW by the approval authority. The approval authority also reviews reports submitted by POTWs. Where a POTW is in noncompliance with pretreatment program requirements, the approval authority generally has available to it the same range of enforcement tools available to POTWs for enforcement against industrial users.

Nevertheless, despite the high levels of noncompliance identified in the EPA study, enforcement against noncomplying POTWs has been limited. In a memorandum to the Assistant Administrator for Administration and Resources Management, the Acting Assistant Administrator of EPA's Office of Water cited as a material program weakness the need to ensure "adequate overview" of POTWs and to "take enforcement where POTWs do not."³ EPA headquarters and regional office officials have also acknowledged that enforcement against POTWs needs to be improved. They explained that (1) until recently, the priority of approval authorities has been on program start-up rather than enforcement; (2) EPA has thus far stressed providing assistance to POTWs to correct pretreatment program problems instead of taking enforcement action against them; and (3) the Agency has had difficulty getting all eligible states to accept the approval authority role in the pretreatment program. As a result, EPA regional resources available to carry out compliance and enforcement

³The memorandum was prepared pursuant to the requirements of the Federal Managers' Financial Integrity Act. That law requires agencies to report material weaknesses in programs' internal controls to the President and the Congress. As part of this requirement, organizational units within EPA—in this case, the Office of Water—first report issues they deem to be material weaknesses to EPA's Office of Administration and Resources Management.

efforts have been stretched thin, and some work that should have been done did not get done.

EPA has recently undertaken two initiatives, discussed below, to (1) improve the designation and tracking of POTWs in noncompliance with pretreatment implementation requirements and (2) provide guidance on bringing enforcement actions against POTWs for failure to implement their pretreatment programs.

Improved Tracking of POTWs in Noncompliance With Pretreatment Implementation Requirements

In September 1987, EPA issued guidance to approval authorities for evaluating and reporting POTWs that have failed to implement their approved pretreatment programs. The guidance provided criteria for assessing noncompliance when the POTW failed to

- issue control mechanisms to significant industrial users in a timely fashion,⁴
- inspect significant industrial users,
- establish and enforce self-monitoring required by the program,
- implement pretreatment standards,
- enforce against pass-through and interference,
- submit pretreatment reports within 30 days,
- meet compliance milestones by 90 days or more, or
- committed any other violation of concern to the approval authority.

EPA regions and approved states must report POTWs that meet these criteria on EPA's quarterly noncompliance report (QNCR). The guidance also requires that the POTW should be advised of its violations and the approval authority should strongly consider formal enforcement action if the POTW has failed to initiate corrective action in the quarter following identification on the QNCR. The guidance further points out that formal enforcement will be the appropriate initial response in a growing number of cases as POTWs become more knowledgeable about their implementation responsibilities.

We discussed the status of this noncompliance tracking system with EPA officials in February 1989. The latest QNCR included some 195 POTWs in reportable noncompliance with pretreatment program requirements.

⁴Control mechanisms establish enforceable limits, conditions for monitoring compliance with limits, and reporting requirements for industrial users. These mechanisms can be implemented through contracts, industrial user permits, or sewer ordinances.

While EPA officials believed this represented underreporting of noncompliance, they believed the completeness of the data would improve as approval authorities gained more experience with the new tracking system.

Guidance on Enforcing Against POTWs for Failure to Implement Pretreatment Program

In 1988, EPA issued guidance on enforcement against POTWs that have been identified on the QNCR as having failed to adequately implement their pretreatment programs. The guidance acknowledges that municipal pretreatment programs must be fully implemented to effectively control industrial discharges of toxic, hazardous, and concentrated conventional wastes into public sewers and stated that enforcement actions against POTWs for failure to implement these programs will be a high priority in fiscal year 1989.

The guidance points out that the decision to initiate enforcement action against a POTW for failure to adequately implement its pretreatment program requires a careful analysis of the underlying program requirements, the legal basis for the violations, and the seriousness of the violations. EPA believes that, as a general rule, the strongest case against a POTW for failure to implement its pretreatment program will contain POTW effluent limit violations attributed to inadequate implementation. The Agency believes such cases are compelling because they show that a POTW's implementation of its program has been so deficient that industrial user discharges have not been adequately controlled, and have caused a POTW to exceed the effluent limits in (or otherwise violate) its NPDES permit. EPA recognizes, however, that the lack of POTW permit effluent discharge violations does not mean that other types of implementation violations should be overlooked. In that regard, the guidance notes that ineffective pretreatment could still result in the POTW discharging increased loadings of pollutants (including toxics) not yet controlled by its permit, or in increasing the risk of future effluent limit violations.

The guidance further indicates that in other cases in which a POTW violates program requirements, but in which there is no evidence of interference or pass-through problems, an enforcement action (including a monetary penalty) may still be appropriate. EPA believes that pursuit of a penalty in these circumstances should have great value in demonstrating to POTWs that they must fully implement their programs before, and

not wait until after, effluent violations occur. The guidance also discusses enforcement options for failure to implement an adequate pretreatment program and situations under which industrial users will be joined to enforcement actions against POTWS.

EPA officials, in October 1988, told us that it was too early to assess the effectiveness of this new initiative. Subsequently, in December 1988, the Agency issued additional guidance on how to calculate penalties against POTWS for failure to properly implement an approved pretreatment program.

Conclusions

POTWS make much less use of formal enforcement actions—such as fines and termination of service—against their industrial users than they do informal actions such as oral and written notices of violation. EPA officials believe this tendency often reflects a failure to escalate enforcement when informal efforts do not succeed in correcting violations. They explained that until recently, there has been a lack of emphasis by EPA and approval authorities on POTW enforcement against industrial users. Other factors contributing to the focus on informal enforcement have been the lack of a consistent definition of what represents (1) significant noncompliance with pretreatment program requirements and (2) timely and appropriate enforcement. In addition, POTWS perceive their role in the local community as one that often makes it politically difficult to take enforcement actions beyond seeking voluntary compliance.

Enforcement against noncompliant POTWS by approval authorities has also been limited. EPA headquarters and regional officials explained that until recently, their priorities have been on program start-up rather than enforcement against POTWS of program requirements.

EPA has initiatives underway to improve both POTW enforcement against noncompliant industrial users and approval authority oversight and enforcement against noncompliant POTWS. While we believe the Agency should be given an opportunity to implement these corrective actions, the issues discussed in this chapter make it unclear whether they will have their intended effect.

For example, to improve POTWS' enforcement against noncompliant industrial users, EPA provided them voluntary guidance in September 1986 on what constitutes timely and appropriate actions for various violations. However, most pretreatment programs had already been

approved and, as EPA officials have acknowledged, still do not include details on enforcement response procedures. Consequently, in EPA's fiscal year 1989 program guidance, the Assistant Administrator for Water reemphasized that POTWs' pretreatment programs should be modified to include detailed enforcement response procedures. EPA does not, however, plan to take more formal action, such as requiring national standards for timely and appropriate enforcement. EPA headquarters officials acknowledge that while they have the authority to require such standards, allowing discretion to the POTW and its approval authority to work together in tailoring an enforcement program to local circumstances is preferable—and consistent with the reliance by the Clean Water Act on the POTW to implement the program.

Nevertheless, while we believe the Assistant Administrator's program guidance to be a step in the right direction, our review suggests that the extent to which the guidance will be followed without more formal Agency action is questionable. Specifically, we identified a number of factors, including local political pressures, that have made some POTWs reluctant to commit themselves to strong enforcement to deal with industrial user violations. Therefore, we believe that at the end of fiscal year 1989, EPA should begin to systematically evaluate the extent to which enforcement response procedures have been incorporated into individual POTW programs. In cases where such procedures have not been adopted, the Agency should require the use of its own standards for timely and appropriate enforcement, such as those contained in its September 1986 enforcement response guidance.

Similarly, to improve approval authorities' enforcement against noncompliant POTWs, EPA provided guidance to approval authorities in August 1988 on enforcement against POTWs for failure to implement POTWs' pretreatment programs. Agency officials have indicated that the extent to which EPA's voluntary guidance is being adopted is presently unclear; but asserted that its implementation will be a high priority during fiscal year 1989. Here, too, we believe that at the end of this fiscal year, EPA should evaluate the extent to which such guidance has been adopted. Where it has not, the Agency should require the use of EPA standards on the type of enforcement actions to be taken under specific circumstances.

Finally, EPA headquarters staff told us that to increase the consistency of enforcement by POTWs against their industrial users, EPA plans to adopt, during 1989, a regulatory definition for when an industrial user is deemed to be in significant noncompliance and therefore warranting

priority attention. We believe that such a definition, which is used in other environmental regulatory programs, would assist POTWs to set enforcement priorities with limited resources. We therefore endorse the EPA plans to promulgate such a definition.

Recommendations

We recommend that the Administrator, EPA, follow through with the Agency's plans to promulgate a regulatory definition for significant non-compliance to be used by POTWs in setting enforcement priorities as soon as possible. In addition, in light of uncertainties about the effectiveness of recent EPA actions to correct other enforcement problems in EPA's pretreatment program, we recommend that the Administrator evaluate these actions at the end of fiscal year 1989 and take follow-up measures where necessary. Specifically:

- Regarding enforcement by POTWs against noncomplying industrial users: For those POTWs that do not sufficiently incorporate existing guidance on enforcement response procedures into individual plant programs, we recommend that the Administrator require the use of EPA standards for timely and appropriate enforcement.
- Regarding oversight by EPA and the states over POTWs: For those approval authorities that do not sufficiently follow the Agency's recent guidance on when to bring enforcement actions against POTWs for failure to implement POTWs' pretreatment programs, we recommend that the Administrator require the use of EPA standards on the type of enforcement actions to be taken under specific circumstances.

Monitoring Is Not Detecting Some Discharge Limit Violations

As noted in chapter 2, EPA's pretreatment regulations require any industrial user subject to a categorical pretreatment standard to monitor its discharges and to document the results of such monitoring on semi-annual compliance reports submitted to the control authority.¹ In addition, if sampling data indicate a violation, such users must repeat the sampling and analysis and report the results to the control authority within 30 days. The regulations do not specify, however, how the data for the compliance reports are to be developed. Rather, the POTW is responsible for establishing monitoring frequencies for all of its industrial users and for determining whether monitoring will be performed by the industrial user, the POTW, or a combination of both.

We found that monitoring activities conducted by many POTWs and industrial users are not detecting some discharge limit violations. Among the reasons: (1) some POTWs do not perform the required sampling inspections; (2) some industrial users do not submit the required reports on the results of their self-monitoring; (3) the sampling frequency varies widely among POTWs; (4) some local limits may not be technically sound; and (5) sampling locations may be selected improperly, thus not assuring that a representative sample of an industrial user's discharge is taken and analyzed. In addition, there are thousands of non-categorical industrial users that are subject to local discharge limits but are not deemed significant by the POTW and its approval authority. As a result, these industrial users are generally not monitored by POTWs, nor are they required to monitor themselves for compliance with those limits.

Some POTWs and Industrial Users Did Not Meet Their Monitoring Requirements

We examined the extent to which POTWs performed required sampling inspections and the extent to which their industrial users submitted required reports on their self-monitoring during a 12-month period. In general, we found that a large majority of POTWs were conducting their required sampling inspections, and that industrial users were generally submitting required self-monitoring reports. Still, a small portion of each of these activities was not being undertaken, indicating that some violations may be going undetected due to noncompliance with monitoring requirements.

Projecting the results of our survey, we estimate that the required number of sampling inspections were not conducted by (1) about 8 (± 2)

¹Under regulations proposed in November 1988, significant noncategorical users would also be required to report to the control authority at least twice per year.

the Lake Michigan area. She said that end-of-process monitoring locations are hard to find. If they exist in the middle of the plant, sampling requires the POTW to deal with numerous industrial user safety requirements. These requirements become a limiting factor in terms of the number of samples that can be taken.

Recognizing the importance of improving selection of sampling locations, EPA has provided guidance on this subject in its draft training manual for control authorities to develop industrial user permits, issued in September 1988. Acknowledging that selection of appropriate sampling points is critical to determine compliance with effluent limits, the manual specifies that sampling locations (1) should coincide with the points at which the effluent limits apply; (2) must produce a sample representative of the nature and volume of the industrial user's effluent; and (3) must be safe, convenient, and accessible to control authority personnel. Once the sampling locations are selected, the manual points out, they must be clearly specified in the permit.

Local Limits May Not Be Reliable

Local limits are particularly important to the success of the national pretreatment program. Some entire categories of industrial dischargers that are not covered by federal categorical standards may still be regulated by local discharge limits imposed by the POTW. Further, categorical standards do not address all priority pollutants discharged by covered industries. In addition, local limits are designed to address state and local water quality and sludge management needs and prevent interference with POTW operations.

We identified a number of factors suggesting that local limits (1) may not have been adopted where needed and (2) are not technically sound.

Local Limits May Not Have Been Adopted Where Needed in Some Instances

In August 1985, EPA directed POTWs to evaluate the need for local limits for six toxic metals: cadmium, chromium, copper, lead, nickel, and zinc. According to EPA, these metals were listed because of their widespread occurrence in POTW influents and effluents in concentrations that warrant concern. We asked POTWs in our survey whether they had performed the required evaluations. On the basis of their responses, we estimate that of 1,188 POTWs, about 84 (± 3) percent evaluated the need for local limits and either adopted them where necessary or are in the process of adopting them. For all six metals, about 9 (± 3) percent did not evaluate the need for local limits for one or more of those metals.

On a broader scale, the Office of Technology Assessment, in April 1987, reported that because many pollutants that are harmful to aquatic resources do not disrupt POTWs' operations, POTWs have had little incentive to develop and impose local limits for these pollutants on their industrial users. The report also stated that a POTW might develop local limits to help meet its NPDES permit limits, but it cited EPA estimates that only 1 percent of all POTW NPDES permits contain any numerical limits on the discharge of toxic metals or organic chemicals. This lack of local limits, therefore, may be resulting in the perfectly legal discharge of toxic pollutants into POTWs.

Some Local Limits Are Not Technically Sound

Several EPA regional pretreatment coordinators told us that local limits established by some of their POTWs are not technically sound; that is, they are not based on a systematic and supportable analysis of a pollutant's impact (at a given concentration level) on the treatment plant and receiving waters. As a result, the limits may be more or less stringent than necessary. One coordinator, for example, estimated that only 40 percent of the local limits used by POTWs in his region were technically based. The others were using local limits developed by other POTWs or derived from the literature or other sources. Another coordinator said POTWs in his region were directed to reevaluate the technical basis for their local limits by Spring 1989 and perform annual updates thereafter.

EPA's Pretreatment Implementation Review Task Force reported in January 1985 that some POTWs required to implement pretreatment programs do not know how to develop local limits. In response to that finding, in December 1987, EPA issued a comprehensive guidance manual on development and implementation of local discharge limits under the pretreatment program. Supplementing that and other guidance, EPA has developed a computer program known as PRELIM, which derives local limits based on a POTW's monitoring, operational, and literature data, and on applicable environmental criteria.

In November 1988, EPA proposed a regulation that would require POTWs to evaluate the need for revising local limits every 5 years, as part of their NPDES permit application. Such evaluations may result in more stringent local limits to deal with the increasing problems of controlling toxic discharges and sludge disposal.

Nonsignificant Industrial Users Generally Not Subject to Monitoring Requirements

In addition to those industrial users covered by the monitoring requirements of the pretreatment program, there are thousands of noncategorical industrial users that are subject to local limits but are not deemed significant by the POTW. These industrial users are generally not monitored or required to self-monitor for compliance with those limits. Rather, the POTW is given discretion as to whether an industrial user has a reasonable potential to adversely affect the POTW and be designated a significant noncategorical industrial user.

Generally, we found diversity of opinions and experiences as to how many noncategorical industrial users are deemed significant, whether more should be so designated, and which noncategorical industrial users are monitored. The Bergen County Utilities Authority, for example, was subjecting more than 200 of its noncategorical industrial users to POTW and/or self-monitoring requirements in 1987. Dayton, Ohio, on the other hand, had designated only 2 of its noncategorical industrial users as significant, even though its 1983 industrial waste survey had identified about 140 noncategorical industrial users discharging process wastewater to the sewer system. An official in New Castle County (a customer of the Wilmington POTW) suggested that the number of significant noncategorical industrial users would be greatly increased if additional resources were made available to the pretreatment program. Despite these variations, however, EPA headquarters and regional officials believe that POTWs were appropriately identifying their significant noncategorical industrial users.

Conclusions

In general, a large majority of POTWs are conducting required sampling inspections, and industrial users are generally submitting required self-monitoring reports. Still, a small portion of each of these activities is not being undertaken, suggesting that at least some violations may be going undetected because of noncompliance with monitoring requirements. In addition, we found indications that monitoring frequencies vary widely among POTWs, sampling locations may be selected improperly, and local discharge limits may not have been established where needed or may not be technically sound. Finally, thousands of noncategorical industrial users are not subject to monitoring because they are not deemed significant by POTWs. Taken together, we believe that some discharge limit violations are not being detected by POTW and industrial user compliance monitoring.

As noted in this chapter, EPA has issued guidance to POTWs to deal with many of these problems. However, as was the case with EPA's guidance

on enforcement response procedures (discussed in ch. 3), this monitoring guidance has generally been issued after many POTW programs were approved. As a result, EPA is unaware of the extent to which its guidance has been incorporated into POTW monitoring programs. Our review, however, has determined that, at least in some instances, such guidance has not been built into these programs. Consequently, we believe that it is appropriate for EPA to direct approval authorities to review all POTW programs to determine if they are deficient in these areas. Where deficiencies exist, POTW programs should be amended or administrative orders should be issued to correct them.

Recommendations

We recommend that the Administrator, EPA, direct pretreatment program approval authorities to review all POTW programs to determine whether

- prescribed sampling frequencies provide reasonable assurance that discharge limit violations by industrial users will be detected,
- sampling locations at industrial users have been selected properly and are clearly specified, and
- required local discharge limits have been issued and are technically sound.

Where deficiencies in any of these areas are identified, the Administrator should direct approval authorities to amend approved POTW pretreatment programs or issue administrative orders to correct deficiencies in those programs.

Future Pretreatment Challenges Facing EPA

Previous chapters have identified considerable noncompliance by industrial users with discharge limits under the pretreatment program; and noted that factors contributing to these types of violations have included the absence of aggressive enforcement by (1) POTWs against noncomplying industrial users and (2) EPA and the states against noncomplying POTWs. In addition, we found indications that compliance monitoring is not disclosing at least some discharge limit violations. We noted that while EPA has taken action to deal with some of these problems, the effectiveness of these actions is presently unclear.

This chapter discusses a number of new and emerging requirements in related water quality programs that will be likely to further complicate EPA's pretreatment efforts. Among the probable effects of these and the other changes discussed below will be (1) a tightening of pretreatment standards for industrial users and (2) an increase in the number of dischargers that need to be monitored for compliance with pretreatment standards. These effects, in turn, can be expected to result in more violations—and a greater burden on enforcement efforts by POTWs, approval authorities, and EPA.

Among the water quality programs that are likely to affect pretreatment efforts substantially in coming years are (1) accelerated controls over toxic discharges and (2) emerging federal sludge management regulations.

Accelerated Controls Over Toxic Point Sources

The Water Quality Act of 1987 added a new program that accelerated actions to control individual dischargers of toxic pollutants, including municipal and industrial wastewater treatment plants. The amendments required the states to submit to EPA by February 4, 1989,

- a list of waters within the state that are not expected to meet water quality standards after technology-based controls have been implemented (i.e., sewage treatment plants have been constructed) entirely or substantially because of point sources of toxic pollutants;
- for such waters, a determination of the specific point sources and the amount of each toxic pollutant discharged; and
- an individual control strategy for each stream segment identified by the state to insure that applicable water quality standards are achieved on such waters no later than June 1992.

Many POTWs are major point sources of toxic pollution. To the extent that these POTWs cause the water quality impairment discussed above, they may have to establish local discharge limits for additional pollutants or strengthen existing discharge limits.

Emerging Federal Sludge Management Regulations

A major function of a pretreatment program is to limit the level of toxic contaminants that are contained in the sludge generated by treatment plants so that certain disposal methods, such as land application as a soil conditioner, are not prohibited or are not too expensive. While there are currently no federal standards for sludge management, EPA has begun to propose regulations that will limit the allowable levels of toxics in sludge in amounts depending on the method of sludge disposal (e.g., landfilling, land application, or incineration). For example, on February 6, 1989, EPA proposed standards for 28 organic and metallic pollutants found in sludge. Depending on the exact limitations included in these rules, POTWs might be required to implement additional pretreatment measures to ensure that their sludges comply with the new federal regulations.

Other Factors That Could Affect Discharge Limits

In addition to the impact of accelerated controls over toxics and emerging sludge regulations, other factors could require the imposition of discharge limits for more pollutants or more stringent existing limits. For example:

- EPA is considering promulgating national pretreatment standards for additional categories of industries. This action could increase the number of industrial users that need to be monitored by POTWs and the number of substances that are subject to discharge limits.
- EPA projects that amendments to the Resource Conservation and Recovery Act, intended to preclude the disposal of hazardous wastes in land disposal facilities, could result in the disposal of increased amounts of hazardous wastes in sewers in the absence of other disposal alternatives. This action could increase the number of industrial users of POTWs and, hence, the number of industrial users requiring monitoring for discharge limit violations.
- Future NPDES permits for POTWs are likely to include limits for more toxic pollutants, including organic chemicals. EPA believes these changes will create additional incentives for POTWs to control the toxic discharges of their industrial users.

Conclusions

A variety of environmental programs—either directly or indirectly—are likely to result in broader and more stringent standards under the pretreatment program—standards that will be more difficult for industry to meet. We believe that these emerging challenges further underscore the need for EPA to take the type of corrective actions discussed in this report to assure that (1) enforcement effectively deters violations of the pretreatment program's toxic discharge limitations and (2) monitoring adequately detects violations that do occur.

Industries Subject to National Categorical Pretreatment Standards

Grain Mills
Sugar Processing
Feed Lots
Electroplating
Organic Chemicals, Plastics, and Synthetic Fibers
Inorganic Chemicals Soap and Detergent Manufacturing
Fertilizer Manufacturing
Petroleum Refining
Iron and Steel
Nonferrous Metals Manufacturing
Steam Electric Power Generation
Ferrous Alloy Manufacturing
Leather Tanning
Glass Manufacturing
Asbestos Manufacturing
Rubber Manufacturing
Timber Products
Pulp, Paper, and Paperboard
Builder's Paper and Board Mills
Metal Finishing
Pharmaceutical Manufacturing
Paving and Roofing Materials
Paint Formulating
Ink Formulating
Carbon Black Manufacturing
Battery Manufacturing
Metal Molding and Casting
Coil Coating
Porcelain Enameling
Aluminum Forming
Copper Forming
Electrical & Electronic Components
Nonferrous Metals Forming

Source: Environmental Protection Agency

Summary of Enforcement Actions Taken by POTWs (Sampling Errors in Parentheses)

Enforcement actions	Categorical industrial users ^a		Significant noncategorical industrial users ^b	
	Times used	% POTWs taking action	Times used	% POTWs taking action
Informal actions				
Verbal warning	4,497 (± 415)	51 (± 5)	5,620 (± 1,104)	51 (± 5)
Written notice of violation	8,180 (± 1,308)	64 (± 5)	8,668 (± 1,960)	61 (± 5)
Show-cause hearing	271 (± 85)	9 (± 2)	109 (± 33)	5 (± 2)
Formal actions				
Compliance schedule	1,274 (± 138)	40 (± 5)	1,067 (± 186)	33 (± 4)
Permit revocation	42 (± 15)	3 (± 2)	•	3 (± 2)
Administrative fine	1,224 (± 74)	5 (± 2)	•	5 (± 2)
Civil penalties	603 (± 115)	5 (± 2)	561 (± 36)	3 (± 1)
Criminal penalties	53 (± 10)	2 (± 1)	23 (± 7)	1 (± 7)
Injunctive relief	23 (± 10)	2 (± 1)	•	1 (± 7)
Terminate service	49 (± 19)	4 (± 2)	•	2 (± 1)

^aOf the 1,188 POTWs, 990 serve categorical industrial users. The estimates in this column apply to these 990 POTWs.

^bOf the 1,188 POTWs, 994 serve significant noncategorical industrial users. The estimates in this column apply to those 994 POTWs.

• These estimates are not reported because the sampling errors were larger than the estimates.

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