Pollution Control Agency

January 1991

Program Evaluation Division
Office of the Legislative Auditor
State of Minnesota

Program Evaluation Division

The Program Evaluation Division was established by the Legislature in 1975 as a center for management and policy research within the Office of the Legislative Auditor. The division's mission, as set forth in statute, is to determine the degree to which activities and programs entered into or funded by the state are accomplishing their goals and objectives and utilizing resources efficiently. Reports published by the division describe state programs, analyze management problems, evaluate outcomes, and recommend alternative means of reaching program goals. A list of past reports appears at the end of this document.

Topics for study are approved by the Legislative Audit Commission (LAC), a 16-member bipartisan oversight committee. The division's reports, however, are solely the responsibility of the Legislative Auditor and his staff. Findings, conclusions, and recommendations do not necessarily reflect the views of the LAC or any of its members.

The Office of the Legislative Auditor also includes a Financial Audit Division, which is responsible for auditing state financial activities.

Professional Staff

James Nobles, *Legislative Auditor*

Roger Brooks, *Deputy Legislative Auditor*

Joel Alter
David Chein
Marilyn Jackson-Beeck
Daniel Jacobson
Elliot Long
Marlys McPherson
Jan Sandberg
Kathleen Vanderwall
Jo Vos
Tom Walstrom
Deborah Woodworth
John Yunker

Support Staff

Jean Barnhill
Barbara Schmidt
Theresa Wagner

Pollution Control Agency

January 1991

Program Evaluation Division
Office of the Legislative Auditor
State of Minnesota

Veterans Service Building, Saint Paul, Minnesota 55155 • 612/296-4708

ERRATUM

On page xvii of the Executive Summary, the following sentence appears:

> "We found that 24 of 53 operating sanitary landfills and 17 of 80 closed sanitary landfills do not have ground water monitoring systems that comply with state rules."

The sentence should read:

> "We found that only 24 of 53 operating sanitary landfills and 17 of 80 closed sanitary landfills have ground water monitoring systems that comply with state rules."

STATE OF MINNESOTA
OFFICE OF THE LEGISLATIVE AUDITOR
VETERANS SERVICE BUILDING, ST. PAUL, MN 55155 • 612/296-4708
JAMES R. NOBLES, LEGISLATIVE AUDITOR

January 17, 1991

Dear Commission Members:

The 1967 Legislature created the Pollution Control Agency (PCA) to be the state's primary regulator of pollution. The agency's size and responsibilities have grown enormously since that time, and there have been recent legislative concerns about its efficiency and effectiveness. In May 1990, the Legislative Audit Commission directed the Program Evaluation Division to evaluate the agency.

We found that PCA's monitoring and enforcement efforts have not been sufficient to ensure ongoing compliance with pollution regulations. The agency does too few inspections, collects too little information on pollution levels, and does not always take effective enforcement action against the pollution violators it does detect. We suggest many ways to improve agency management, but we also think the Legislature can make enforcement more efficient by granting PCA broader authority to issue administrative penalties for pollution violations.

In addition, we recommend that the roles of the PCA Board and staff be more clearly distinguished. The board should focus on policy issues, appeals, and agency oversight, while the commissioner should be given more authority to act on individual cases.

We received the full cooperation of the Pollution Control Agency. We thank permittees and county officials who responded to our surveys, and the many other people we spoke with for their helpful observations.

The report was researched and written by project managers Joel Alter and Tom Walstrom and senior staffer David Chein, with assistance from John Jaimez, Jay Kroshus, and Deborah Wemette.

Sincerely yours,

James R. Nobles
Legislative Auditor

Roger A. Brooks
Deputy Legislative Auditor

TABLE OF CONTENTS

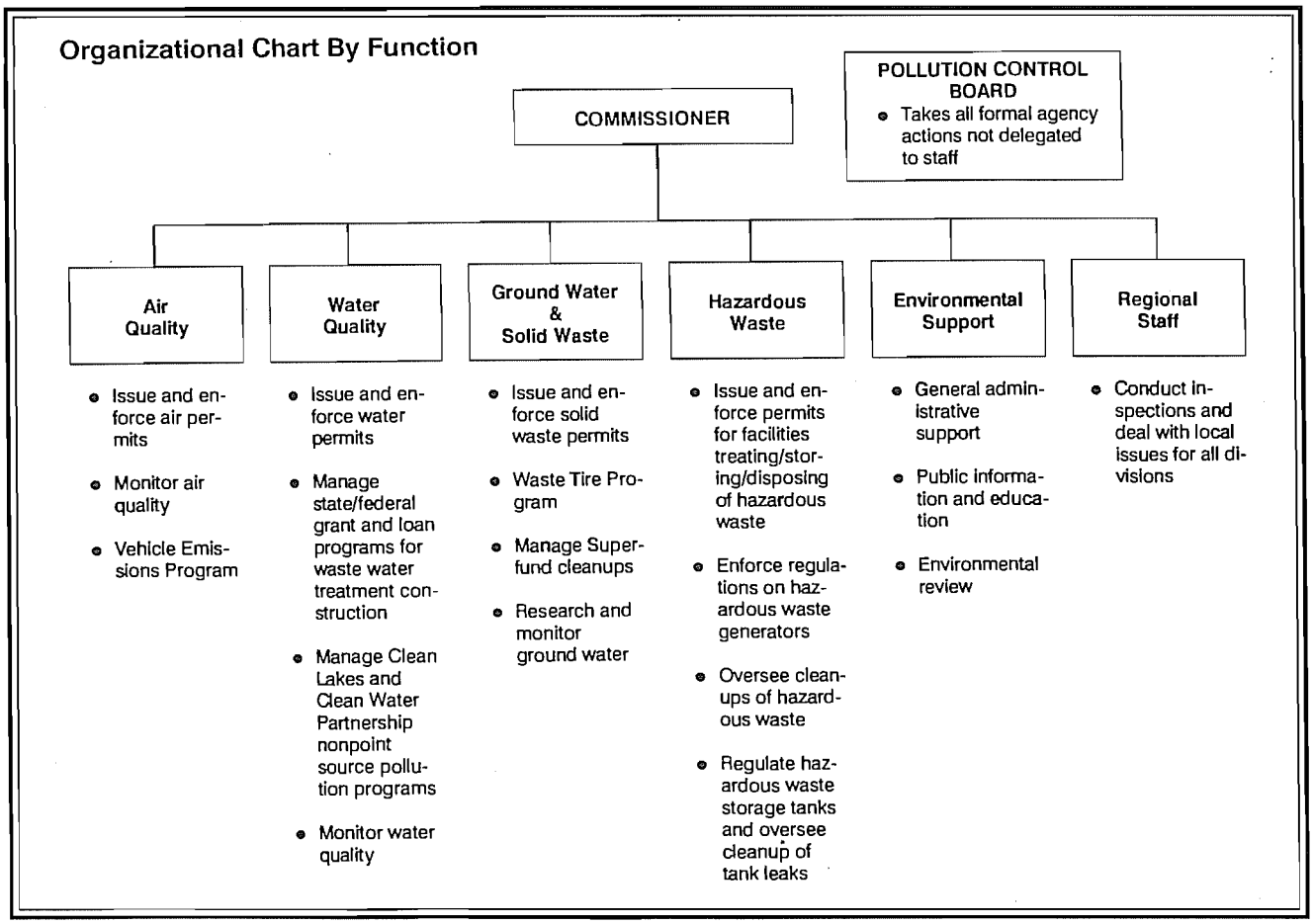
LIST OF TABLES AND FIGURES

POLLUTION CONTROL AGENCY

Executive Summary

The Pollution Control Agency (PCA) was created in 1967 to be the state's primary regulator of air and water pollution. Since that time, the Legislature has also given PCA authority to regulate solid and hazardous wastes. The number of agency staff has grown from 35 to more than 700 over its 24-year history.

Unlike most state agencies, PCA consists of both a policy board and a staff agency. The Governor appoints members of the nine-member board to staggered terms, and also appoints PCA's commissioner. The PCA Board has most of the agency's formal power. Almost all agency actions must be approved by the board or explicitly delegated to staff.



PCA has a difficult mission. It is expected to protect the environment, while at the same time avoiding unduly burdensome regulation. It is an agency that serves many "masters": the U.S. Environmental Protection Agency (EPA), the Governor, the Legislature, the PCA Board, and the citizens of the state. It regulates some pollutants for which there is little information on health and environmental risks. To a large extent, PCA's practices are dictated by federal rather than state regulations. Some people want PCA involved in decisions about facility siting, size, and production processes, while others want to limit PCA's role to ensuring that facilities' discharges are at safe levels. In short, PCA operates in an environment with many constraints, little consensus, and very high stakes.

Because of concerns about PCA's growth and effectiveness, the Legislative Audit Commission directed us in May 1990 to evaluate PCA. In our study, we asked:

- **Does PCA efficiently and effectively regulate polluters and clean up hazardous waste sites?**
- **Does PCA collect enough information on pollution levels, and does it use this information to enforce pollution regulations?**
- **What accounts for PCA's staff increases, and what functions do these staff fulfill?**
- **What should be the roles of PCA's board and staff?**

To answer these questions, we interviewed PCA staff and board members, EPA officials, and representatives of regulated facilities and environmental advocacy groups. We reviewed files and data in each of PCA's major divisions. We surveyed county solid waste officers and companies with air quality permits.

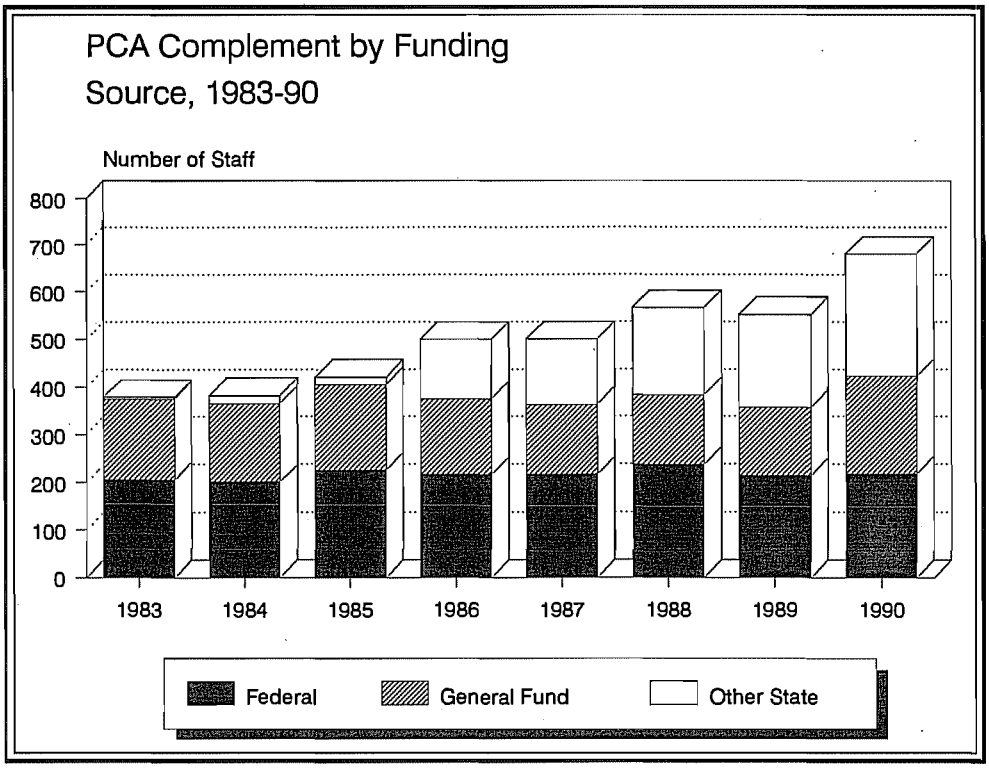
In general, we found that PCA's monitoring and enforcement efforts have not been sufficient to ensure ongoing compliance with pollution regulations. PCA does too few inspections, collects too little information on pollution levels, and does not adequately monitor information submitted by permittees. Many of the agency's permitting processes have been slow and inefficient, and there is significant room for improvement in the agency's information management systems. Some of the agency's priorities have been driven by funding sources rather than by an assessment of health and environmental risks. While there may be some areas in which PCA should seek fee increases for additional staff, we think the agency should address most of its problems through management efficiencies and staff reallocations. At the same time, it is worth noting that two-thirds of the agency's budget comes from federal funds and special revenue sources (such as fees), thus limiting PCA's flexibility to reallocate staff.

AGENCY GROWTH AND FUNDING SOURCES

Public concern about the environment led to the creation of PCA and has fueled its growth ever since. The number of authorized staff tripled from 1972 to 1982, and has nearly doubled since 1982. In recent years, most of the growth resulted directly from new legislative initiatives, particularly in solid and hazardous waste. For example, in 1980 Congress created the federal superfund program to clean up hazardous waste sites, and three years later the Minnesota Legislature created a state superfund program. Together, these programs have resulted in 90 new staff positions.

Agency funding sources have become more diverse.

Until 1984, most of PCA's programs were funded by the state general fund and federal program grants. However, as shown below, agency funding sources have diversified during recent years. PCA started collecting permit fees in 1985. In addition, the Legislature has approved a fee on petroleum distributors to fund regulation and cleanup of storage tanks, a tax on hazardous waste generators to fund state superfund cleanups, and a user fee to fund a vehicle emissions inspection program.



The nature of PCA's staff has changed considerably since 1967. Originally, PCA was created primarily to be a regulatory agency—that is, to develop and enforce standards. Nearly all of PCA's early staff regulated water and air pollution, and there were no staff overseeing pollution cleanups. Today, in contrast, permitting and enforcement remain significant responsibilities, but cleanup staff are the largest single category of staff. The proportion of the

Pollution Control Agency Staffing, By Type

Type of Staff	Water Quality	Air Quality	Ground Water & Solid Waste	Hazardous Waste	Environmental Support	Total
Managers and supervisors	23	10	16	16	8	73
Permit	16	16	15	11	0	58
Compliance and Enforcement	31	14	14	17	0	76
Monitoring and Special Projects	28	32	21	18	0	99
Rule Development	3	7	5	8	0	23
Clerical	21	10	17	22	7	77
Administrative & Staff Support	13	0	2	4	41	60
Cleanups	0	0	66	45	0	111
Community Assistance	9	0	12	6	0	27
Environmental/Technical Support	47	0	0	0	5	52
Total	191	89	168	147	61	656

NOTE: Staffing not including full-time positions held vacant as of October 1990. Public Information Officers funded by other divisions are included in the Environmental Support Division.

agency's staff working in the Air Quality and Water Quality Divisions has dropped to just 40 percent.

The expansion of the agency and development of new programs has contributed to staff turnover problems. During a recent 12-month period, about one-fourth of PCA staff left their positions. Most staff took other positions in the agency or state government, rather than jobs in the private sector. High staff turnover is a problem at PCA because it delays action, confuses the regulated industries and local governments, and increases the workloads of PCA staff. Although high rates of turnover exist in all of PCA's divisions, its effects are especially severe in PCA's Ground Water and Solid Waste Division, where cleanups and permitting processes often take several years.

AIR QUALITY DIVISION

Minnesota companies emit more than 500,000 tons of air pollutants each year. These emissions pose health risks, contribute to acid rain and ozone depletion, and are unsightly. Federal regulations establish "ambient" (or atmospheric) standards for the six "criteria pollutants" listed in the box at right, and EPA is beginning to develop standards for other pollutants, known as air toxics. There are also federal and state standards for air pollution emissions from individual sources.

Criteria Pollutants:

- Carbon Monoxide
- Sulfur Dioxide
- Particulates
- Ozone
- Nitrogen Oxide
- Lead

Permits

PCA issues five-year permits to companies that demonstrate that they are capable of meeting air quality standards. At a minimum, there are 1,100 sources of air pollution in Minnesota that should have permits. PCA issued permits to about 700 of these sources in the past five years, and another 100 have permits that are more than five years old. In addition, we found that:

- **PCA has identified at least 300 Minnesota companies that should have air quality permits but do not, and there are hundreds of sources for which PCA has not yet determined the need for a permit.**

Many companies do not have air permits. Many others are awaiting PCA's review.

One reason for the large number of unpermitted facilities is that the Air Quality Division has not adequately publicized the need for permits to Minnesota companies. In addition, the lack of state and federal air toxics rules account for many of the unpermitted sources of toxic air emissions. For example, the list of unpermitted facilities includes 19 of Minnesota's 33 top emitters of carcinogenic compounds and 40 of the 66 top emitters of noncarcinogenic toxic compounds.

An efficient permitting process not only encourages environmental protection, but enables businesses to operate without unnecessary delays and makes PCA a more credible regulator. Unfortunately, we found that:

- **There is a backlog of 250 air quality permit applications at PCA, with nearly half in the earliest stages of PCA review.**

The application backlog represents a minimum of 18 months of work for the division's permit staff. Permittees and PCA staff offered us many suggestions for improving the efficiency of the permitting process. For example, updating air quality rules would avoid many case-by-case negotiations that now occur, and better permit application forms and instructions would help avoid the need for repeated requests for information from PCA staff to applicants.

Given the large backlog of permit applications and unpermitted facilities, it is likely that management efficiencies alone will not enable PCA to establish a comprehensive, timely permit system. The division will probably need some additional permit staff, and PCA should first consider internal staff reallocations. PCA should also consider using revenues from the state permit fees mandated by recent amendments to the federal Clean Air Act. Unless Minnesota applies for an exemption from EPA, the new federally-mandated fees will result in 10 times more annual fee revenue than the Air Quality Division collected in 1990.

Monitoring and Enforcement

Once PCA issues permits, it is responsible for ensuring ongoing compliance with permit conditions. To do this, the Air Quality Division has several potential sources of information, including: (1) on-site PCA inspections, (2) reports

from companies that have continuous emissions monitoring equipment, (3) "stack tests" indicating the content of emissions, and (4) data reported by companies for PCA's periodic "emissions inventory." We found that the Air Quality Division does too few inspections and does not make enough use of the other sources of information on company compliance.

For example, we found that:

- **PCA inspects stationary emission sources less frequently than federal and state guidelines suggest is appropriate.**

EPA and PCA guidelines generally call for annual inspections of large sources, biennial inspections of medium sources, and inspections every five years for smaller sources. However, based on 1989 inspection rates, PCA inspects large facilities once every 2.5 years, medium facilities once every 2.7 years, and small facilities once every 16 years. PCA records indicate that inspections have never been conducted at 21 percent of Minnesota's large sources, 29 percent of the medium sources, and 58 percent of the small sources. We found that PCA conducts more frequent inspections in the Twin Cities metropolitan area and the eastern half of the state, where its inspection staff are based.

PCA does too few air quality inspections.

In addition, PCA has not made extensive use of information sources that provide better data on actual emissions than do inspections. Only about 50 of Minnesota's 800 permitted sources have continuous emissions monitoring equipment, and PCA did not systematically review emissions data from these systems until 1990. Also, we found that only about one-third of Minnesota's large emission sources conducted stack tests in a recent 42-month period. Finally, PCA collects emissions inventory data from companies every two years, contrary to the annual reporting requirements of state and federal rules.

We reviewed notices of violation issued by the Air Quality Division during 1989 and found that the most common reasons for these actions were operating without a permit and smoky or dusty emissions. In contrast, the division issued relatively few notices of violation for emissions of criteria pollutants and none for toxic pollutants—in part because the division collects and reviews limited information on these pollutants, and because there are no air toxics rules. Criteria and toxic pollutants usually pose greater health risks than smoke and dust, and should receive greater scrutiny by PCA enforcement staff.[1]

WATER QUALITY DIVISION

Federal and state water quality regulations predate the regulations for other forms of pollution. The federal government started providing construction grants to municipal wastewater treatment plants in 1956, and it first required states to develop ambient pollution standards in 1965. EPA delegated author-

1 PCA staff noted that opacity can be used as a surrogate for air toxics in certain cases.

ity to issue water quality permits to Minnesota in 1974. In the past, PCA focused its efforts on municipal pollution sources because there was federal funding available for treatment plant construction and staff. Today, both PCA and EPA are shifting their emphasis to *nonpoint* sources of pollution (such as agricultural run-off) and toxic pollutants.

The Water Quality Division issues about 200 permits a year, more than 90 percent of which are renewals of existing permits. We found that it takes PCA a median of nine months to reissue permits after receiving applications, and most permits are not renewed before their expiration date. Based on our review of permit files, we determined that permittees usually submit applications in a timely manner, but:

- **PCA staff do not begin reviewing applications early enough to ensure that permits are issued on time.**

Enforcement of water quality permit conditions relies on self-monitoring and reporting by permittees, usually on a monthly basis. PCA has effluent information on "major" facilities on a computer database, but it is only now entering information on "minor" industrial facilities.[2] We found that:

- **Although the database containing monitoring reports should be the division's primary means of identifying noncompliance, staff have not analyzed the information systematically.**

We also have concerns about the accuracy of permittee monitoring reports. For example, we found that more than 18 percent of municipal treatment plants (especially small plants) do not have properly certified operators. Also, 160 of Minnesota's 1,100 permittees have not submitted monitoring plans that describe procedures for gathering and analyzing water samples. In 1991, the Department of Health will start certifying laboratories that analyze samples, so this should improve the accuracy of effluent data.

Minor wastewater discharges are inspected infrequently.

EPA requires that 90 percent of major facilities be inspected each year, and PCA's goal is to inspect minor facilities once every five years. We found that:

- **PCA inspects major facilities annually, but about 35 percent of the minor municipal facilities and 90 percent of minor industrial facilities were not inspected in the past five years.**

More than one-half of facility inspections found permittees out of compliance with some permit conditions.

We examined permittee compliance with effluent standards during fiscal year 1990. Effluent violations are more serious if they occur often or are significantly above limits. As shown in the table, 18 percent of industrial major, 13 percent of municipal major, and 5 percent of municipal minor facilities had effluent violations in six or more months during the year.

2 Chapter 3 defines major and minor facilities. Only about 80 of the state's 1,100 permittees are major facilities, but they account for over 70 percent of discharges.

Effluent Violations, FY 1990

	Major Municipal Facilities	Minor Municipal Facilities	Major Industrial Facilities
Total permitted facilities	53	519	28
Facilities in violation	26	206	20
Percent of facilities in violation one or more times	49.1%	39.8%	21.4%
Number of violations	150	1,073	126
Number of months in violation	91	594	67
Average number of months in violation per facility	3.8	2.8	3.0
Facilities in violation three or more months	14	80	8
Facilities in violation six or more months	6	29	4
Facilities in violation during June 1990	11	61	10

NOTE: Information on minor industrial facilities was not available from PCA's database.

Permittees must meet certain reporting requirements as well as scheduled dates the permittee has agreed to. We found that:

- **Most major facilities meet schedule and reporting requirements, while minor facility compliance is spotty.**

To determine how many of the 1990 effluent, schedule, and reporting violations at major facilities were significant, we examined quarterly reports that PCA submitted to EPA. These reports are based on standard EPA methods for identifying serious noncompliance. We found that, depending on the quarter examined, between 70 and 93 percent of industrial facilities and 77 and 89 percent of municipal facilities were in complete compliance. Only three major facilities were out of compliance during all of fiscal year 1990.

The Water Quality Division issues about 65 notices of violation annually. However, we found that PCA did not issue notices of violation to most permittees that had effluent violations in more than three months of 1990. In addition, the division has rarely used more formal enforcement actions, such as stipulation agreements, because they are time-consuming to negotiate and it has limited means of encouraging companies to enter these agreements.

GROUND WATER AND SOLID WASTE DIVISION

Many solid waste landfills and hazardous waste disposal sites pose long-term threats to the state's ground water. The Ground Water and Solid Waste Division administers two major programs that address this problem: (1) the permitting and regulation of solid waste landfills, and (2) state and federal superfund programs to clean up hazardous waste sites. Compared to most other areas of pollution regulation, there has been relatively little federal regulation of solid waste. In contrast, Minnesota's counties have important roles in solid waste planning and also operate many landfills.

Landfill Regulation

PCA has issued permits to 373 solid waste management facilities of various types, and 218 are still handling solid waste. Most household garbage goes to "sanitary landfills," for which PCA started issuing permits in 1971. However, the early permits (called "perpetual" permits) did not have expiration dates and did not require adequate water monitoring systems or other measures to protect against ground water contamination. PCA now issues permits for five year periods and requires landfill liners and extensive ground water monitoring systems. In the mid-1980s, PCA embarked on an effort to upgrade all sanitary landfills and adopted new solid waste rules in 1988. We found that:

- **22 of the state's 53 operating sanitary landfills still have perpetual permits, and many of the landfills with five-year permits do not meet the requirements of state solid waste rules.**

Many landfills do not have ground water monitoring systems.

We found that 24 of 53 operating sanitary landfills and 17 of 80 closed sanitary landfills do not have ground water monitoring systems that comply with state rules. In fact, 4 open and 30 closed sanitary landfills do not monitor ground water quality at all.

We also found that it usually takes several years for PCA to issue landfill permits. This has been particularly frustrating to county solid waste staff. According to our survey of county staff, 55 percent of the counties rated the timeliness of the division's permit staff as "poor" and another 25 percent rated them as "fair." Thirty-nine percent said delays have caused their counties financial hardship.

The division also enforces state rules by inspecting landfills and reviewing water quality monitoring reports. We found that:

- **Effective enforcement to correct solid waste permit violations is the exception rather than the rule.**

For example, as of October 1990, 54 percent of the open and closed sanitary landfills had not submitted ground water monitoring reports for either the spring or summer quarters of 1990, due June 30 and September 30 respectively. We also found that the division did not inspect as many landfills as planned during 1990. When inspectors find violations, the division usually has not taken effective action to correct the problems. We found numerous examples of long-term permit reporting and operational violations that did not result in penalties or eventual compliance. In fact, the penalties levied by the Ground Water and Solid Waste Division (less than $10,000 in 1989) are a small fraction of those levied by each of the other PCA divisions.

Superfund Cleanups

At sites where hazardous waste has been improperly disposed, PCA assesses the extent of environmental contamination, identifies responsible parties, and oversees cleanups. We found that:

- **The division has done a good job of cleaning up superfund sites and getting responsible parties to pay the cost. However, there remain many sites that have not yet been addressed.**

Cleanup has started at most contamination sites, but cleanups of landfills will require more funds.

As of October 1990, Minnesota had identified 166 sites needing cleanup under either the federal or state superfund programs. Cleanups have been completed at 32 (19 percent) of the sites. There has been no cleanup started at another 46 sites (28 percent), and cleanup is now being done at the remaining 88 sites (53 percent). Responsible parties are paying for 81 percent of the cleanups completed or underway. According to EPA officials and national data we reviewed, Minnesota appears to have cleaned up sites faster than most states.

Superfund cleanups take from five to seven years to complete, and the division has made more progress on the more seriously contaminated sites. Eventually, most sanitary landfills will be eligible for inclusion on the superfund list. However, there has been relatively little progress in cleaning up the state's current landfill superfund sites. The division estimates that the total cleanup cost for landfills could be $300 million. The present balance in the superfund account is only $14 million, and superfund revenues from Minnesota's hazardous waste tax were only $700,000 in 1989. Municipal liability limits of $400,000 raise additional questions about how future landfill cleanups will be financed.

HAZARDOUS WASTE DIVISION

According to federal regulations, wastes are hazardous if they have one of the four characteristics shown in the box at right. Federal and state regulation of these wastes is

Hazardous Wastes Are:

- Ignitable
- Corrosive
- Reactive, or
- Toxic

more recent than regulation of air, water, and solid waste. EPA issued its first hazardous waste rules in 1980, and PCA created a separate Hazardous Waste Division in 1987. In 1989, Minnesota hazardous waste generators shipped 57,000 tons of waste out of state, compared to 23,000 tons that went to in-state facilities.

We found that PCA's Hazardous Waste Division has established a good framework for its regulatory programs. The division has comprehensive rules, regular communications with regulated facilities, and good training programs for staff. Although the 8,000 generators identified by the division are probably less than one-third of the state's total, the division has made considerable efforts to identify generators.

We also found that:

- **The division conducts regular inspections of the largest facilities that handle hazardous waste, but minimal inspections of small hazardous waste generators.**

We found that the Minnesota facilities that treat, store, and dispose of hazardous waste have been inspected an average of once a year since receiving their permits. Also, PCA inspects about 10 percent of the state's "large quantity generators" every year. These inspection rates are within EPA guidelines for inspection frequency. There are no EPA guidelines for smaller generators, but, at current inspection rates, PCA could inspect small generators only once every 100 to 300 years. One way the division could increase its inspections of small quantity generators is to improve inspector productivity. We found that the division's inspectors averaged only about 12 full compliance inspections each during 1989. In part, this reflects travel time, since this division is the only one that has no enforcement staff located outside the Twin Cities metropolitan area.

Administrative penalty orders have been an effective enforcement tool.

We also found that hazardous waste generators in the Twin Cities area receive more frequent inspections than the rest of the state's generators. This is because the seven metropolitan counties conduct a total of more than 2,000 hazardous waste inspections annually, and other counties conduct no inspections. Annually, PCA inspects about 50 generators in the Twin Cities area and about 50 generators outside the Twin Cities.[3]

The 1987 Legislature granted the Hazardous Waste Division an enforcement tool that other PCA divisions do not have. Specifically, the division can issue administrative penalty orders for up to $10,000 without PCA Board approval. We found that:

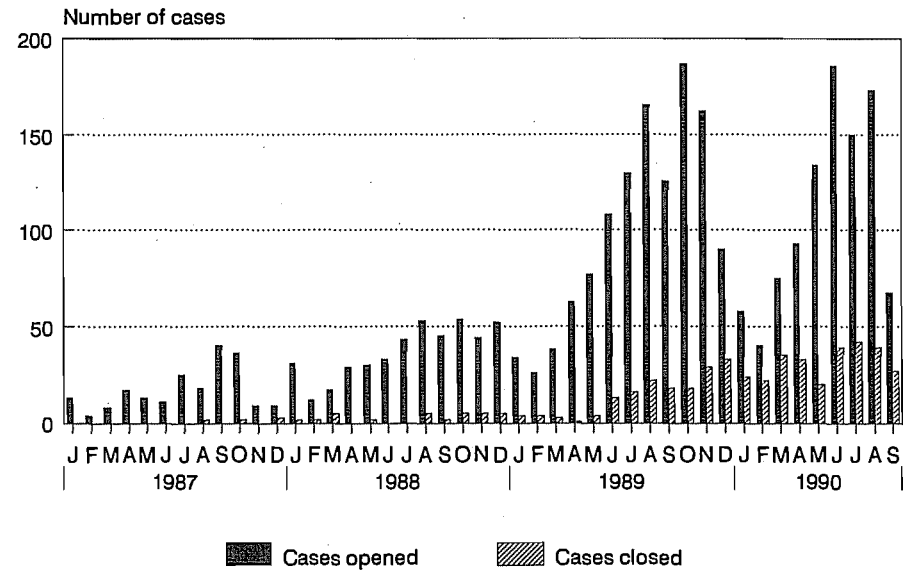
- **The division takes too long to issue administrative penalty orders following inspections (a median of nearly three months). However, the orders have usually brought hazardous waste violators back into compliance quickly and have rarely been challenged by violators.**

3 Although counties conduct a large number of inspections, they often do little followup when problems are discovered. In contrast, PCA staff spend more time on followup than on inspections.

The 1987 Legislature also authorized a fee on petroleum products to be used for cleanup of storage tank leaks. The Department of Commerce administers this fund (the "Petrofund"), and PCA oversees the cleanup process. Unlike superfund cleanups in which responsible parties pay for most costs, the state Petrofund pays for most leaking storage tank costs (more than $16 million since 1987). PCA added about 50 staff to oversee tank cleanups in the past three years, but has still accumulated a large backlog of leak cases, as shown below.

The backlog of tank leak cases continues to grow.

Tank Leak Cases Opened And Closed Monthly By PCA, 1987-90



SOURCE: PCA Hazardous Waste Division

Relative to other PCA programs, the resources devoted to leaking storage tanks are probably not justified solely by the environmental threats posed, although some leaks do pose significant risks. Rather, the tanks program has grown primarily because of the availability of dedicated federal and state funding and the Legislature's desire to help businesses with large, unanticipated costs. We also found that:

- **The tanks program lacks adequate cost control incentives.**

For example, the Department of Commerce has lacked the staff and standards to determine whether applications for tank cleanup reimbursements are "reasonable," as required by state rules. Also, state regulations do not require responsible parties to seek competitive bids when selecting vendors for tank cleanups.

Some leaks and spills that pose risks greater than those posed by most tank leaks have not received sufficient PCA oversight. Most notably, there is little

long-term oversight of pipeline leaks because there are no PCA programs with funding or clear jurisdication for pipeline cleanups.

MANAGEMENT INFORMATION SYSTEMS

Throughout PCA, we found problems with management information systems. Some noteworthy examples include:

- **The Air Quality Division does not have a systematic means of tracking the status and backlog of permit applications.**
- **The Ground Water and Solid Waste Division has only recently installed a management information system that will enable the division to track permits and compliance with rules.**
- **Although the Hazardous Waste Division collects considerable data on waste shipments, it has not yet used its computer system to identify discrepancies that might indicate improper waste disposal.**
- **The Water Quality Division has not used its computerized database to routinely monitor compliance with permits.**
- **The divisions do not adequately track the staff time spent on various activities. This information would help PCA set permit fees to reflect true costs.**

FEES

PCA collected $3.3 million in fees from polluters in 1990. Despite large increases in permit fees in recent years, we found that these fees do not cover PCA's basic regulatory costs. Fees cover 2 to 15 percent of the total costs of PCA's various divisions.

Fees do not cover the full costs of permitting and enforcement.

Permit fees have not reflected PCA's actual staff costs to issue permits, especially for large polluters. As a result, PCA recently accepted a $300,000 gift from a large emission source (Koch Refinery) for the purpose of expediting reissuance of the company's air quality permit. We think this is a bad precedent and does not address the fundamental problems with the agency's fee structure.

We also found that state laws are unclear about the circumstances in which pollution fees can be charged. Minnesota's general fee laws suggest that fees should be charged only for services that directly benefit fee payers, while PCA statutes authorize broader uses for fees. We think that charging polluters for the true cost of regulation, rather than shifting the burden to all taxpayers, is a reasonable and sound basis for state policy.

POLLUTION CONTROL AGENCY BOARD

Aside from the Legislature, the nine-member, part-time PCA Board is Minnesota's chief policy-making body for pollution control. The 1967 Legislature created the board largely as a check against the power of the Governor or PCA commissioner. This is one of the reasons the Legislature created staggered terms for members.

Although many states besides Minnesota have boards that oversee pollution control, the PCA Board has more formal authority than any board of which we are aware. The board sets policy largely on a case-by-case basis, for instance, by approving permits and enforcement actions. However,

- **The board spends little time discussing broad strategic issues.**

For example, the board rarely considers overall strategies to improve the effectiveness of the agency's enforcement efforts or looks at the relative health risks of pollution problems addressed by various PCA divisons. Because the board is involved in so many of the agency's decisions, it would be difficult for the board to devote significant time to strategic discussions without reducing the rest of its workload.

The PCA Board should take a more strategic role. The PCA commissioner should have more authority.

We interviewed board members, current and former PCA managers, and parties affected by PCA decisions to evaluate the need for the board. We found that the strongest advantage of having the board is that it provides a forum for discussion of difficult issues with widespread impacts. Having the board also improves staff work, buffers staff from controversial decisions, and brings an independence to decision making that staff lacks. However, the existence of both a staff and board also weakens accountability by (1) blurring responsibility for important decisions, and (2) giving the Governor less control over environmental policy. In addition, the board process results in some delays and additional staff expenditures.

Empirical analysis alone cannot determine whether or not to continue the board. The Legislature should periodically weigh the benefits of a public forum on pollution issues against the confusion and reduced public accountability that result from the current arrangement. However, if the board is to be continued, we think its focus should be on appeals and broad policy, with the PCA commissioner given more independent authority to act on individual cases.

We also examined the scope of the board's permit review. Traditionally, PCA has issued permits to applicants that could demonstrate their ability to meet state and federal pollution regulations. However, as a result of a recent Attorney General's opinion, PCA will probably conduct more in-depth analyses of permit applications, looking for less polluting alternatives. We have no legal basis for questioning the Attorney General's interpretation of current laws, but we think the Legislature should consider its practical effects: longer per-

mit reviews, duplication of the planning roles of other governmental units, and increased focus on the means of pollution control, rather than the ends.

RECOMMENDATIONS

Overall, we think PCA has many capable staff and has contributed significantly to protection of the state's environment during the past two decades. But we also think there is considerable room for improvement in PCA's efficiency and its enforcement of state and federal pollution regulations.

This report contains numerous recommendations for internal improvements in agency management that we think will improve PCA's efficiency. There is a general need for better information management systems for tracking and acting on permits, compliance, and cleanups. We also think that PCA should update state air quality rules, review permit fee structures, develop a strategy for mitigating the effects of staff turnover, ensure that landfills upgrade their water quality monitoring systems, recommend to the Legislature financial options for cleaning up landfills under the superfund program, and focus hazardous waste inspections on generators outside the Twin Cities area. The PCA Board should focus more attention on strategic issues, rather than individual cases. PCA staff should help the Legislature ensure that agency priorities are driven by health and environmental risks more than by funding sources. Most important,

- **PCA should ensure continuing compliance with pollution regulations by collecting better information and using it more systematically to detect noncompliance.**

In the past, the PCA Board and commissioner have left most management decisions to the PCA divisions. To ensure that problems cited in this report are addressed, we think it will be especially important for the commissioner and board to provide overall direction to the divisions and expect progress reports on these issues.

Our report also contains many recommendations for the Legislature. We think it is particularly important for the Legislature to provide PCA with an enforcement tool that gives violators a stronger incentive to comply with regulations. We recommend:

- **The Legislature should grant the PCA commissioner authority to issue administrative penalty orders for violations of air, water, and solid waste regulations. Before granting this authority, the Legislature should expect PCA to identify circumstances in which such penalties would be used.**

We also recommend that the Legislature:

- **Clarify the laws governing PCA fees and authorize PCA to collect fees for certain enforcement activities;**

- **Authorize the PCA commissioner, rather than the board, to take more actions than the board currently delegates, such as stipulation agreements and superfund requests for response action;**

- **Prohibit PCA from accepting gifts from permittees;**

- **Restrict PCA from reviewing alternatives to proposed solid waste management facilities, thus limiting PCA's role to ensuring compliance with regulations;**

- **Review the intent and implications of the 1973 Minnesota Environmental Policy and Rights Act, and, at a minimum, require the Environmental Quality Board to adopt rules for reviews of "feasible and prudent alternatives" of proposed facilities;**

- **Place additional cost controls on leaking storage tank reimbursements, and consider limiting the scope of the state Petrofund reimbursement program;**

- **Reconsider the staffing needs of PCA's vehicle emissions inspection program; and**

- **Authorize the use of the Petrofund to pay for staff oversight of pipeline spills.**

INTRODUCTION

Environmental protection has always been a high priority for Minnesota's citizens. Since 1967, the Pollution Control Agency (PCA) has been the state's chief environmental regulatory agency. In that role, PCA is expected to protect the environment while at the same time not unduly burdening industries and local governmental units that must comply with regulatory statutes. PCA often finds itself in the middle of complex and controversial issues, from the Reserve Mining case of the 1970s to the permitting of new incinerators and landfills in the 1990s. In many cases, there is dispute over the scientific basis for PCA's decisions and in some cases over the agency's regulatory fairness.

Since the agency began in 1967, its budget has grown from $260,000 to over $39 million. Staffing has increased from 35 positions in 1967 to over 700 today. This staff increase reflects increased public awareness of the environment. In addition, it reflects a movement toward cleaning up past environmental damage as well as regulating current pollution. In order to finance this expanded role, in the last six years PCA has increasingly been funded from various forms of user and permit fees.

As the result of the large growth in agency staff and budget along with general concerns over effective environmental regulation, legislators asked the Legislative Audit Commission to evaluate the agency. In our study we asked:

- **What accounts for PCA's staff increases and what functions do staff fulfill?**
- **What should be the roles of PCA's staff and board?**
- **Does PCA efficiently and effectively regulate polluters and clean up hazardous waste sites?**
- **Does PCA collect enough information on pollution levels, and does it use this information to enforce pollution regulations?**

We addressed these questions using a variety of methodologies. We interviewed a large number of current and former agency employees, along with representatives of environmental groups, regulated entities, environmental consulting firms, and other state and federal environmental agencies. In each

division, we examined samples of permit and enforcement actions, although our reviews looked at somewhat different items because of differing regulatory requirements. Where possible, we also examined the agency's computer records of enforcement and permit actions. We analyzed budgetary and personnel information to examine the agency's change in staffing and turnover issues. In addition, we conducted surveys of air quality permit holders and county solid waste officers. Our focus in each division was the agency's permitting and compliance activities. Time did not permit us to address all of the programs and activities of the agency.

The report is organized into six chapters. Chapter 1 reviews the change in the agency's staffing, mission, and funding since its creation in 1967, as well as reviewing the role of the PCA Board. Chapters 2 through 5 review the operating divisions of the agency: Air Quality, Water Quality, Ground Water and Solid Waste, and Hazardous Waste. Chapter 6 presents a discussion of a number of issues common to the agency as a whole, and presents our recommendations. We also review the literature pertaining to alternative forms of pollution regulation in Chapter 6.

ORGANIZATION AND STAFFING

Chapter 1

In this chapter we review the statutory framework that the Pollution Control Agency (PCA) operates under, the growth of the agency staff and the change in funding sources over time, and we consider questions about the role of the agency's board. We address these key questions:

- **How has PCA's staffing and funding changed over time?**
- **What is the proper role of the PCA Board?**

CREATION OF THE AGENCY

The Pollution Control Agency (PCA) was created in 1967 to act as a central state regulator of air and water pollution. PCA took over the responsibilities of the Interagency Water Pollution Control Commission under the Department of Health and added a new state authority to regulate air pollution.[1] In 1969 the Legislature added the responsibility to regulate solid waste.[2]

The purpose of this reorganization was to elevate pollution control to a higher and more visible priority of government. Although the agency's authorizing legislation gave it broad powers, PCA's function was thought to be regulation, as opposed to broad environmental policy making.

The Pollution Control Agency is a board made up of nine members appointed by the Governor with the advice and consent of the Senate.[3] One board member shall be knowledgable in agriculture and no more than two shall be employees or elected officials of municipalities. No member may be an employee of the federal and state government or affiliated with a municipal sewage board.

---

1 *Minn. Laws* (1967), Ch. 882.

2 *Minn. Laws* (1969), Ch. 1046.

3 The original legislation called for seven members. In 1969, the Legislature changed the membership to nine and instituted the requirement that one member be knowledgeable in agriculture.

The Legislature also provided for a director and staff, appointed by the Governor and responsible to him. The staff were to:

> Perform only the highly technical functions of formulating antipollution standards and monitoring harmful pollutants.... The real regulatory decisions, however, were to be made by a policy board.[4]

Many Minnesota state agencies have historically been governed by part-time citizen boards, although the clear trend has been away from boards and toward a centralization of power and authority in the executive branch of government. However, the perception in 1967 was that pollution control was such an important and controversial policy area that a citizen board was needed as a check against the power of the staff and the Governor. After reviewing the growth of the agency staff and change in PCA's funding sources, we examine the current role of the board.

AGENCY ORGANIZATIONAL STRUCTURE

PCA is currently organized into six divisions: Air Quality, Water Quality, Ground Water and Solid Waste, Hazardous Waste, Regional Support, and Environmental Support Services. Figure 1.1 shows the organization of the agency and the major functions carried out by each division. PCA has a current staff complement of over 700 positions.

The Water Quality Division currently has a staff complement of 198.[5] Water quality programs are the oldest run by the department. When PCA was created, it took over an existing program staffed by the Department of Health. Since the passage of the federal Water Pollution Control Act in 1972, the division has run programs to issue and enforce water quality permits to *point-source* dischargers and to award grants and supervise the construction of new or modified wastewater treatment plants. As we discuss in Chapter 3, the agency program to support construction of municipal treatment plants is now diminishing in size as interest grows in controlling nonpoint sources of pollution. Recent state and federal nonpoint source pollution control programs have added 23 new positions to the division.

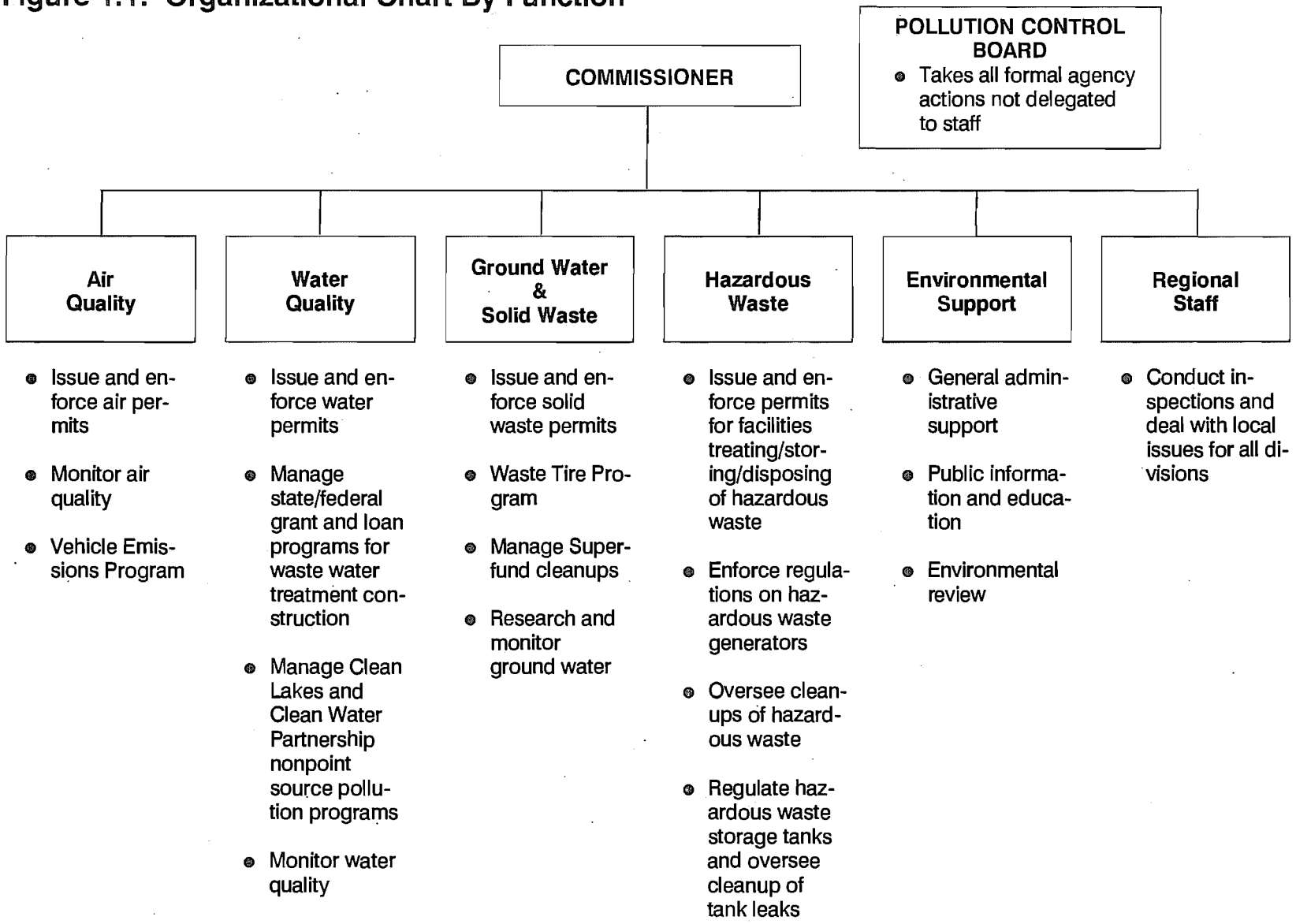
The Air Quality Division currently has a complement of 105 and it administers programs designed to permit stationary sources of air emissions. The division also monitors ambient air quality across the state. Until recently, the program has been relatively stable in terms of funding and personnel. However, in 1988 and 1989, the Legislature added 16 positions for a new program to monitor vehicle emissions in the Twin Cities.

The Ground Water and Solid Waste Division has a staff complement of 170 and it supervises programs to dispose of solid waste and remediate the poor disposal of hazardous wastes at state and federal superfund sites. These pro-

4 See Elizabeth Haskell and Victoria Price, *Environmental Management: Case Studies of Nine States*, (New York: Praeger, 1973), 50.

5 The division has funds to fill only 191 positions.

Figure 1.1: Organizational Chart By Function



grams have grown dramatically in recent years as more has been learned about the harm to ground water caused by past solid waste landfilling practices and improper disposal of hazardous wastes. Congress enacted the Resource Conservation and Recovery Act in 1976 and the Comprehensive Environmental Response, Compensation, and Liability Act (known as the superfund law) in 1980 to begin to address these problems. These programs and the 1983 passage of a state superfund law have led to the large increase in staffing.

The Hazardous Waste Division is the newest division of the department. It was split off from the Ground Water and Solid Waste Division in 1987 and it currently has a staff complement of 154. It is responsible for managing programs to clean up past and current leaks and spills of hazardous materials from storage tanks and other sources, permitting and inspecting facilities that treat, store, and dispose of hazardous waste, and regulating the generators of hazardous waste.

PCA maintains five regional offices around the state staffed with personnel to do inspections for some of the programs and to do other local liaison work.[6] There are currently 24 positions in the regional offices' complement, but that does not include approximately 22 other positions paid for by other agency divisions. For example, the Water Quality Division pays for one position in each region to work on nonpoint source pollution projects.[7]

The Environmental Support Division provides central support to the agency, including personnel, accounting, and computing support. This division also provides public information and education services and manages the environmental review process for the agency. The division has a current staff complement of 61.

The Attorney General's Office provides legal support to the agency with a staff of 13 attorneys (two currently on leave) and one paralegal staff member.[8] The Attorney General handles the full range of legal services for the agency, but approximately 60 to 70 percent of the attorneys' time is spent on enforcement-related issues and negotiations.

Table 1.1 shows a breakdown of personnel by the type of activity they engage in.[9] The table shows that:

- **Although PCA was thought of in 1967 primarily as a regulatory agency, the majority of the agency's staff now are devoted to purposes other than permitting and enforcement.**

6 PCA has staff in Duluth, Brainerd, Detroit Lakes, Marshall, and Rochester.

7 The agency has recently shifted 14 of these positions into the complement of the regional support offices and plans to shift 2 more. As a result, the regional offices will have a complement of 40 and there will be a consequent reduction in other divisions' complements. In addition, there are approximately 6 student workers in regional offices.

8 This group of attorneys also provides legal support to the Office of Waste Management, Environmental Quality Board, and the Hazardous Substance Compensation Board, and carries out other legal work related to environmental issues.

9 This table shows a total different than the agency complement because we did not include any positions being held vacant.

Table 1.1: Pollution Control Agency Staffing, By Type

Type of Staff	Water Quality	Air Quality	Ground Water & Solid Waste	Hazardous Waste	Environmental Support	Total
Managers and supervisors	23	10	16	16	8	73
Permit	16	16	15	11	0	58
Compliance and Enforcement	31	14	14	17	0	76
Monitoring and Special Projects	28	32	21	18	0	99
Rule Development	3	7	5	8	0	23
Clerical	21	10	17	22	7	77
Administrative & Staff Support	13	0	2	4	41	60
Cleanups	0	0	66	45	0	111
Community Assistance	9	0	12	6	0	27
Environmental/Technical Support	47	0	0	0	5	52
Total	191	89	168	147	61	656

NOTE: Staffing not including full-time positions held vacant as of October 1990. Public Information Officers funded by other divisions are included in the Environmental Support Division.

PCA's role has broadened since 1967.

The largest functional category is for staff involved in environmental cleanups, primarily the superfund and tank programs. The next largest category is environmental monitoring and special studies with 93 staff, followed by clerical, compliance and enforcement, management and supervisory, permitting, administrative support, community assistance, and rule development. Many of the staff doing monitoring, special studies, and rule development directly support and are a necessary element in PCA's regulatory efforts. PCA officials also note that many of the cleanup programs have a regulatory focus as well. Nonetheless, the trend has clearly been toward increased staffing to undertake and supervise environmental cleanups and toward PCA doing more research to support environmental standard setting. This reflects the broadening of the agency's role over time away from a narrower regulatory focus and toward a more comprehensive one.

Each of PCA's divisions administers certain programs for the U.S. Environmental Protection Agency (EPA). EPA has delegated Minnesota major regulatory responsibilities for superfund cleanups and air, water, and hazardous waste regulation. Most of PCA's contacts are with EPA's Region V office in Chicago. Region V includes Minnesota, Wisconsin, Michigan, Ohio, Illinois, and Indiana.

GROWTH OF THE AGENCY

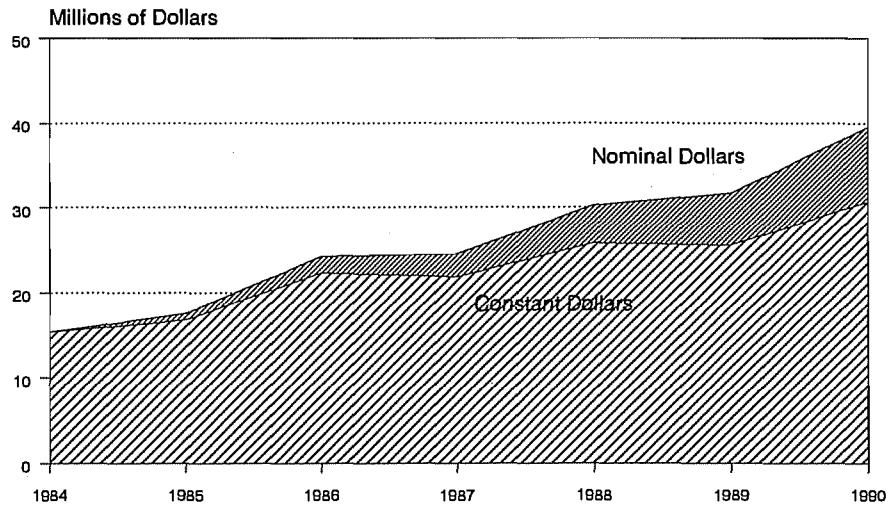
Change in Staffing

When PCA was first created, it had a budget of $263,000 and a staff of 35. By 1972, the agency had grown to a staff complement of 145 and a budget of $1.2 million. Water quality was the agency's dominant program with 62 staff, air

quality had 20 staff, 14 staff worked on solid waste issues, and the remainder of staff worked in various administrative and support roles.

Figure 1.2 shows the agency's expenditures in nominal and constant dollars since 1984. The agency budget has increased 157 percent in nominal dollars and about 100 percent in constant dollars between fiscal year 1984 and 1990.[10] Figure 1.3 shows the breakdown of expenditures by division for fiscal year 1990.

Figure 1.2: Growth in Pollution Control Agency Budget, Nominal and Constant Dollars, 1984-90



PCA's staffing has grown along with its funding. Between 1972 and 1982, PCA's staff complement almost tripled to over 370 positions. Since 1982, the agency's staff complement has almost doubled again. We examined the change in agency staffing from 1983 to the present. Table 1.2 shows the growth in staff complement by division since 1983. As the table shows, the primary areas of growth have been in the solid and hazardous waste programs. During the 1980s, PCA became more involved in managing environmental remediation projects such as superfund and leaking underground storage tank cleanups. This has resulted in the staff complement for ground water, solid and hazardous waste regulation tripling from 107 positions in 1984 to 320 in 1991.

The agency has clearly experienced tremendous growth in personnel. However, we found that:

- **The vast majority of PCA's growth in both staffing and budget resulted from new state and federal legislative initiatives, rather than expansion of existing programs.**

10 We adjusted for inflation using the GNP price deflator for state and local government purchases.

Figure 1.3: PCA Expenditures by Division, 1990

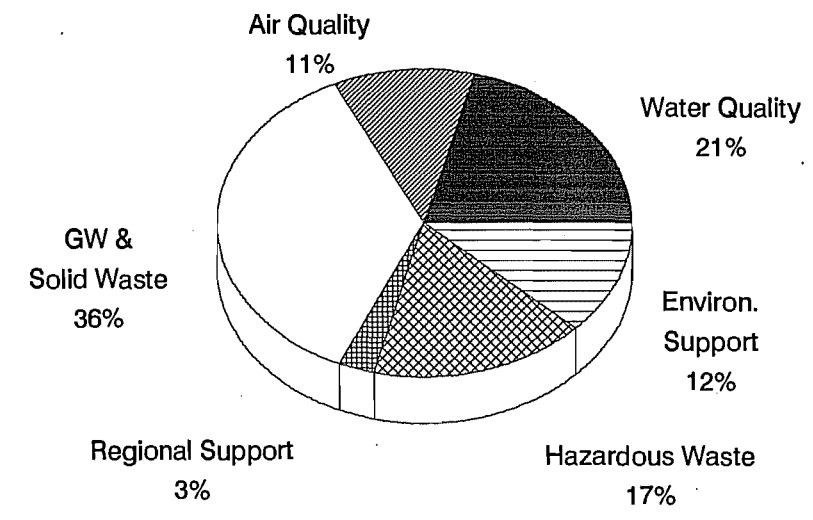


Table 1.2: Staff Complement, By Division, FY 1984-91

	1984	1985	1986	1987	1988	1989	1990	1991
Water Quality	151.0	166.0	180.0	176.0	180.0	180.0	187.3	198.3
Air Quality	59.0	62.0	66.0	65.0	72.0	72.0	94.0	105.0
Solid/Hazardous Waste	107.0	154.0	197.0	195.0				
Ground Water/Solid Waste					137.0	137.0	166.5	169.5
Hazardous Waste					107.0	125.0	148.0	150.0
Regional Operations	20.0	20.0	20.0	20.0	21.0	21.0	24.0	24.0
General Support	30.0	31.0	36.0	43.0	49.0	49.0	60.5	60.5
TOTAL AGENCY	367.0	433.0	499.0	499.0	566.0	584.0	680.3	707.3

NOTE: Complement as of October 1990.

The decade of the 1980s marked the passage of a number of new environmental initiatives, many of which resulted in staffing increases for PCA. In 1983 the agency received a major increase in funding and staffing with the passage of the state superfund act.[11] The superfund act established an environmental cleanup fund that allows the state to take independent actions to clean up hazardous waste sites. The fund is financed through taxes on hazardous waste generators and through general fund appropriations. The state superfund act was the beginning of a trend in finding new and innovative ways to finance environmental cleanups. PCA currently funds 57 positions from the state superfund and 33 from the federal superfund.

11 *Minn. Laws* (1983), Ch. 121.

In 1984, the Legislature established the waste tire program. This program issues licenses and permits for waste tire transporting, storage, and processing and administers a waste tire abatement program. It has a complement of 11 staff funded by the proceeds of a $4 fee on motor vehicle transfers.

In 1985, the Integrated Ground Water Information system was established to be a central repository for ground water quality data. Originally funded from the federal Clean Water Act grant, the 1989 state Ground Water Protection Act appropriated general fund dollars to administer the program.

PCA has grown because of new legislation, not expansion of existing programs.

In 1986, the agency began a property transfer program that responds to business and individual requests for environmental histories on property transfers. The program is financed by the environmental fund; fees are charged to parties requesting the service and deposited to cover the cost of the program's eight staff.

The 1987 Legislature authorized the Department of Revenue to collect a petroleum tank release cleanup fee. This fee currently funds 20 staff in the Hazardous Waste Division to regulate storage tanks and to oversee tank cleanups. The division's federal funds, primarily from the federal leaking underground storage tank program, have also dramatically increased, currently paying for 60 full-time positions and 15 student workers. New fees charged to hazardous waste generators and treatment, storage, and disposal facility annual permit fees also pay for 29 positions.

The Legislature also passed the Clean Water Partnership Act in 1987.[12] PCA received 4 state positions in 1988 and recently received funding for 19 additional federal positions to address nonpoint source pollution.

In 1988 and 1989 the Legislature added 16 positions to the Air Quality Division for a vehicle emissions inspection program. This program will be funded through a fee, not to exceed $10, paid by the vehicle owner.[13]

Along with the agency's growth during the 1980s came an increase in staff turnover. Turnover increased in 1990. Table 1.3 shows staff turnover in fiscal year 1990 by division and job type. Turnover was a particular problem in the Ground Water and Solid Waste Division (over 39 percent) and Hazardous Waste Division (27 percent). Most of the turnover is due to transfers within PCA and to other state agencies rather than staff leaving to take jobs in private industry. Turnover was cited as a problem by almost all of those regulated by PCA, since it results in delays and sometimes inconsistencies in dealing with the agency. We discuss turnover in more detail in Chapters 4 and 5.

---

12 *Minn. Laws* (1987), Ch. 389.

13 The current positions are paid for by a loan from the Motor Vehicle Transfer Fund, which will be repaid once the program begins operation.

Table 1.3: Turnover in Staff, FY 1990

	Water Quality	Air Quality	Hazardous Waste	Ground Water & Solid Waste
Managers	–	–	1	–
Supervisors	–	–	1	5
Project Leaders/Managers	–	–	4	6
Engineers	7	1	3	3
Hydrologists	3	–	4	15
Pollution Control Specialists	18	2	15	16
Other Professional	3	3	1	–
Clerical	6	3	2	9
Total Turnover	37	9	31	54
Total Positions Beginning of Fiscal Year	177	74	115	145
Percent Turnover	20.9%	12.2%	27.0%	37.2%

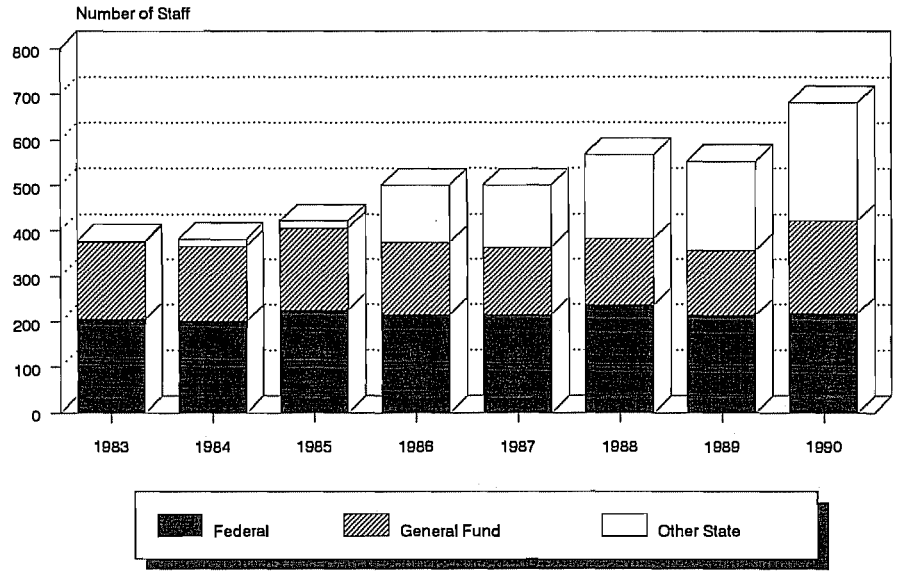
NOTE: We defined turnover as any change in position that resulted in the employee leaving their current section of the organization.

Change in Financing

As we noted above, PCA has been financed by revenues from increasingly varied sources. Prior to 1984, PCA's budget came almost exclusively from the state general fund and from federal program grants. Figure 1.4 shows the change in positions financed from the general fund since 1983.

Other funding sources have paid for PCA's growth.

Figure 1.4: PCA Complement by Funding Source, 1983-90



The Legislature first authorized the collection of permit fees in 1983.[14] Beginning in 1986, PCA has seen a large increase in the staff financed by special fees of various types. The fees are deposited into designated revenue accounts and generally are appropriated back to the agency.

Many permittees expressed concerns to us about the growth in permit fees. Fees now fund about 10 percent of the air quality division staff, 15 percent of the water quality staff, 2 percent of ground water and solid waste staff, and 15 percent of the hazardous waste division staff.

The Legislature has increasingly adopted the concept that "the polluters should pay" for the costs of regulation instead of financing regulation through general revenues. Given this concept, we have suggestions for changes in the way fees are set in later chapters.

Koch Refinery Gift

As we have indicated, PCA has benefited from new and innovative funding sources. However, one recent innovation causes us some concern. One of the state's largest air emission sources, Koch Refinery, is planning to make significant and costly changes in its production process and air pollution control equipment that would require a modification of its air quality permit. Koch volunteered to give PCA a gift of $300,000 so that PCA can expeditiously review its permit application. PCA's board reviewed the gift and approved it by an 8-1 vote at its August 1990 meeting. PCA will use the gift to hire consultants to review certain tests required to establish the new permit conditions. PCA staff claim that they will be unable to review the permit modification application and the required environmental impact statement in a timely manner without additional staff.

Accepting large gifts from regulated parties is bad public policy.

We believe that accepting large gifts from permittees for the purpose of expediting permit review is bad public policy for several reasons. Koch will be receiving preferential treatment from the agency that most permittees do not have the resources to buy. While it is understandable that Koch would want and need timely review of its permit application, "volunteering" to fund PCA's permit review sets a bad precedent. The potential exists that permittees' applications could be held up by the agency if they do not "voluntarily" donate funds. This process also presents the possibility for the agency to fund items that the Legislature has explicitly chosen not to. The agency is also vulnerable to the public perception that the donor of funds is "buying" the permit. We expect, given this precedent, that other large firms that need timely review of permit applications will find themselves "volunteering" gifts.

The agency is sensitive to the questions about the propriety of the gift and it took several actions to try to ensure that the permit action will be unbiased by it. For example, agency managers set up an escrow agreement to administer the funds, held meetings with interested citizens and board members, and conferred with legislators and others before seeking board approval. Nonethe-

14 *Minn. Laws* (1983), Ch. 301, Section 113.

less, in our opinion, state regulatory agencies should not accept gifts from those they are responsible for regulating.

It seems to us that the underlying problems in this case are the permit backlog and delay (discussed in the next chapter on the Air Quality Division) and a permit fee that might not properly capture the costs of permit reviews. As we discuss more fully in the next chapter, the cost of permitting and regulating Koch is not recaptured through the permit fees the company is paying. If funding is the problem, the agency needs to make its case in legislative appropriation hearings for increased fees or general fund appropriations, rather than cutting deals with the regulated entities. We believe that PCA should return the gift and seek alternate financing for Koch's permitting from the Legislature. However, that may not be practical at this time. We also believe that this is a practice that state regulatory agencies should not be engaged in. We recommend:

- **The Legislature should amend *Minnesota Statutes* §116 to prohibit PCA from accepting gifts from parties that it regulates.**

ROLE OF THE PCA BOARD

Aside from the Legislature, the nine-member, part-time PCA Board is Minnesota's chief policy-making body for pollution control. In fact, state law defines the Pollution Control Agency as the board, not as the commissioner and staff. As a result, almost all agency actions must be approved or explicitly delegated by the board. Legislators asked us to consider whether the PCA board was still needed. In order to address this, we interviewed current board members, past and current commissioners and agency managers, and a variety of representatives of regulated entities about what they thought of the board process.

The 1967 Legislature created the citizens board largely as a check against the power of the Governor or PCA commissioner. The Legislature wanted to strengthen and consolidate the state's pollution control activities, but it also wanted to guard against excessive regulation.

Other States' Organizational Structure

The PCA Board has broad authority.

Many states besides Minnesota have boards that oversee state pollution control, but we are unaware of any that have authority comparable to that of PCA.[15] A common model in other midwestern states is to have a board or boards to review and approve administrative rules.

15 We were unable to find literature discussing the organizational structure of pollution regulation in all 50 states, although we discussed the issue with EPA officials, and reviewed literature discussing the issue and state statutes from selected states. In addition, we talked to a current PCA board member who has conducted research on citizen boards in other states. See Marcia Gelpe, "Citizen Boards as Regulatory Agencies," *Urban Lawyer 22*, no.3 (Summer 1990): 451-483.

Illinois has three executive agencies that deal with environmental regulation. The Illinois Environmental Protection Agency (IEPA) issues permits, takes enforcement actions, and recommends emission and effluent standards to the Pollution Control Board. The Pollution Control Board consists of seven members who actually set standards through the rulemaking process. The board, which has its own staff, also functions as an administrative apellate reviewer of IEPA actions. The Department of Energy and Natural Resources serves in a planning and environmental coordination role, much like the State Planning Agency in Minnesota.

Indiana has both an air quality and a water quality board, staffed by the agency, that establish administrative rules. The Indiana Environmental Protection Agency issues the permits and takes enforcement and other actions.

In Michigan, the Department of Natural Resources (DNR) oversees water, air, and solid waste programs. A seven-member bi-partisan Natural Resources Commission oversees the DNR and appoints the director. However, the director is responsible for taking enforcement actions. The commission hears permit appeals for all types of permits. A six-member Water Resource Commission establishes surface and ground water quality standards and issues all water permits. Three members of the commission are state department heads and three are executive appointees. An 11-member Air Pollution Control Commission sets ambient air quality standards and emission levels and issues permits. The commission consists of a toxicologist, two industry representatives, two local government, and one organized labor representatives, two public members, and three state agency heads.

Wisconsin's air, water, and solid waste pollution control efforts are vested entirely in the Department of Natural Resources. The DNR issues permits, collects fines, and takes enforcement actions other than litigation. Wisconsin's Natural Resources Board adopts policy and conducts rulemaking.

How Does the Board Conduct Business?

The board normally meets for two days per month. In recent years the board has developed a committee structure to consider upcoming board issues in a less formal setting. The board has committees for air and water quality, ground water and solid waste, hazardous waste, radioactive waste, and environmental policy. Board committees generally meet on the day before the regular board meeting. Although the committees have no formal role in board deliberations, controversial items are almost always discussed in committee before being brought before the whole board. The board's formal meeting normally is held on a Tuesday and it generally lasts all day. The board sometimes has additional special meetings to consider other items.

The agenda for committee and board meetings is generally set by staff, although board members frequently request that certain items be included. Permittees and other affected parties can also request to be heard by the board. Issues are brought to the board by staff in the form of "board items." Board items are background memoranda describing the issue before the board, the

recommended staff decision, and the rationale for the recommendation. Board members receive packets containing several hundred pages of board items approximately one week before board meetings. During fiscal year 1990, PCA staff brought 181 items before the board for formal decisions. In addition, staff presented 230 items for information, for committee review, or to respond to individual member requests. In most divisions, the number of items brought before the board represents a relatively small portion of total division actions taken. For example, the Air Quality Division told us that about five percent of its permit actions and ten percent of enforcement actions came before the board during 1989.[16]

Most board items are voted on. Previous commissioners and current board members estimated that well over 90 percent of board actions followed staff recommendations. Sometimes the board does amend staff proposed resolutions, but there is no real effort to establish or follow precedents or to articulate the reasons for not following staff recommendations. As a result, some staff said they got conflicting messages from the board. Some regulated interests also reported what they perceived as inconsistent board actions.

Each year, the board formally delegates certain responsibilities to the commissioner and staff. For example, the board has delegated to the commissioner the authority to issue notices of violation and to issue most permits. However, staff often bring delegated items to the board if they are likely to be controversial. The delegation agreement requires matters to be raised at a board meeting if "an affected or interested person requests."

The PCA Board does not focus enough on broad strategy.

Board members and staff told us that policy is largely made on a case-by-case basis. According to current and former managers, the board has been more interested in the application of policy to particular cases than in discussing the issues and implications of rulemaking. While the board spends considerable time discussing specific cases,

- **The board spends little time discussing broad strategic issues.**

For example, the board rarely considers overall strategies to improve the effectiveness of the agency's enforcement and permitting efforts, or looks at the relative health risks of pollution problems addressed by various PCA divisions. It would be difficult for the board to devote significant time to strategic discussions without reducing the rest of its workload. Board members told us that the demands of current PCA meeting agendas are already formidable. One exception to this general finding is the efforts of the Environmental Policy Committee and a taskforce of regulated parties to develop an improved permitting process. This group recently put together a brochure explaining the permitting process and its requirements.

16 All stipulation agreements must go through the board.

Reasons to Keep the Board

We discussed the PCA Board with representatives of both environmental advocacy and business interests. Within both groups, most of the people we talked with think the board serves a useful purpose. In fact, it appears to us that:

- **The PCA Board's strongest advantage is that it provides a forum for discussion of difficult issues with widespread impacts.**

Business representatives told us that no state agency affects their companies more than PCA. Environmental regulation significantly affects business owners' costs and operating methods. Most of the business representatives we talked with preferred having a board rather than leaving decisions solely to staff. Environmental advocacy groups believe that the board process offers a forum for their views. The process allows board members to make decisions based on many factors, not just the technical recommendations of staff.

The board is a useful forum for discussing difficult environmental issues.

Another benefit of the board cited by many was that it served as a buffer for both the Legislature and PCA staff in difficult and controversial environmental decisions. The board process shifts final responsibility for controversial decisions from staff to the board, which some people told us reduces staff burnout.

There was general agreement that the board process results in better staff work. Before making decisions, the board listens to the viewpoints of various groups, including staff. Because most board members are not technical experts, staff and other interested groups must present their arguments in clear terms to persuade the board. Some members told us that this makes debates on controversial issues more understandable to the general public.

A final advantage claimed for the board is that it brings an independence to decision making that staff lacks. Agency staff may have narrow or technical perspectives or may act in the interest of the agency, rather than the public. In contrast, citizen boards are intended to provide independent, common sense approaches to regulation. Board members have no direct ties to the bureaucracy; for example, the commissioner is not a board member, and state employees cannot be board members. The board has authority to participate in the agency's budget process, but usually has not played an active role.

Reasons to Eliminate the Board

It is the exception rather than the rule for executive agencies in Minnesota state government to report to a governing board. In our view, the primary disadvantage of the PCA's structural arrangement is that:

- **The presence of both a staff and board weakens accountability.**

First, parties affected by PCA decisions are not sure who is in charge. The board makes final decisions on most important matters, but many interested parties work extensively with staff before these decisions occur. Some industry representatives told us that PCA staff try to anticipate the response of board members to their technical recommendations, thus tainting the objectivity of these recommendations. Likewise, board members justify some actions by saying that they merely followed the advice of staff.

Perhaps more important, having a board may weaken public accountability by creating a buffer between the Governor and agency staff.[17] Because PCA members serve staggered terms, a new Governor has limited impact over the board's composition and policies early in a four-year gubernatorial term. The PCA commissioner appointed by the Governor may have views that differ significantly from the board's. In fact, one former commissioner told us this has occurred.

Several board members also noted that the commissioner and staff were not directly accountable to the board, which has created problems in the past. They noted that it made the board less able to shape the agency's agenda. Several suggested that accountability would be improved if the commissioner was appointed by the board rather than the Governor. In contrast, several former commissioners felt that if a board is necessary at all, the commissioner should be a member and perhaps chairman.

Some people told us that legislative changes since 1967 have reduced the need for a board. In its early years, the board was the primary venue for appeals for people who felt they had been wronged by the regulatory process. Since that time, however, the Legislature has created an Office of Administrative Hearings to consider contested cases. The PCA Board authorizes contested case hearings and ultimately decides whether to accept the recommendations from them. Nevertheless, the presence of the Office of Administrative Hearings makes the PCA Board's appellate role less necessary today than it was in 1967.

The board requires significant staff time and causes delays in agency actions.

Another disadvantage of the board is the time required by staff to prepare for and attend board meetings. Some current and former PCA managers told us that the time required to prepare for meetings is not justified by the board's eventual impact on decisions.[18] We asked PCA administrators to estimate the amount of time their staff devoted to board activities in the past year. Based on their best estimates, PCA staff spent about 11,000 hours (or about six staff-years) on activities that would not have been done without a board. Much of this time is spent by the agency's top supervisors and management. Many current and former managers commented that the board process drives the rhythm of the agency's activity. A board meeting occurs, then agency managers have a week or two to carry out their normal responsibilities before they begin to prepare for the next board meeting.

17 *State Environmental Management: Case Studies of Nine States* (New York: Praeger, 1973), 64-5.

18 According to both staff and board members, it is relatively uncommon for the board to overrule staff.

The board also causes delays in PCA actions. Actions requiring board approval usually take two to three months longer than other actions. Many issues are discussed in committee for one or more months before being taken to the full board. Although we discuss problems with agency timeliness later in the report, we think the board approval process is only one of many contributing factors.[19]

Finally, the strength of the board depends on the quality of its members, and many people we interviewed expressed concerns about appointments. Some people told us that staff provide a check on the board, rather than vice versa as the Legislature originally intended. While people should not be required to have special expertise to serve on the board and the appointees should be broadly representative of the public, the board's work involves complex legal and technical issues. Even with good background materials from PCA staff, part-time board members may feel overwhelmed by their workload. It is likely that the workload will increase and become more technical in the future. Board members also told us that their jobs were complicated by the fact that there is little orientation to the board for new members, nor is there a formal statement of the board's role and purpose. Board members learn about the board and the agency by attending board meetings, rather than through written statements of purpose or orientation sessions. As a result, it is possible that board members can have a number of views on what the proper role of the board is.

Conclusions

Although the PCA Board delegates many of its authorized duties to staff, it infrequently addresses strategic issues and is nearly overwhelmed by its current agenda. There are several possible ways to address the workload of the board. The board could be made full-time (like the Public Utilities Commission, for example), though it may not be possible to get a broad cross section of membership if the job required a full-time commitment. Alternately, as several other states have done, there could be several boards with each focusing on just one issue area. The advantages of a more limited scope of decision would be better familiarity with the issues and less of a time demand on members. The disadvantage is a fragmentation of decision making authority and a lack of consistent overview of all agency activities. Another alternative is that the board could not consider some items that it currently spends time on. The board could delegate more items to staff or the Legislature could reassign some of the board's current statutory role to the commissioner. Several people told us there are additional items the board could delegate to staff, but board members are reluctant to delegate more. We recommend:

The PCA commissioner should have greater authority to act.

- **The Legislature should authorize the commissioner, rather than the board, to conduct more activities than the board currently delegates, including superfund requests for response actions, stipulation agreements, and certain rule making.**

19 The board acts on a relatively small portion of PCA activities, and the board delays are minor compared to the total length of some processes for permitting and enforcement.

We believe the best form of organization would retain the board's quasi-appellate function, but give the commissioner the responsibility for taking most actions except for major rulemaking.[20] Any decision of the agency would be appealable to the board within a set period of time after the commissioner took action.[21] This would retain the board scrutiny of agency actions and allow interested parties to appeal agency decisions without going through a contested case proceeding or to court, but it would make the lines of permit and enforcement action decision making clearer.

In our view, the board's first priority should be the establishment of overall strategic policy for pollution regulation, and hearings on individual cases should have lower priority. Thus, we recommend:

- **The board should focus more of its efforts on overall policy and evaluation of agency effectiveness, and less on individual case review.**

We think that it would be extremely helpful if the board would develop a statement of its role and purpose and work with agency staff to develop information packets for new board members. We believe systematic annual reviews by the board of how well the agency is carrying out its strategic plan for pollution regulation would also be helpful. Although we believe the board should be more active in overseeing the agency's operations, the board should resist the temptation to be overly involved in agency day-to-day operations.

The board should focus more on broad policy and appeals.

In addition to considering how the board could operate more effectively, we also considered whether it makes sense to continue having a PCA Board. We concluded that empirical analysis alone does not suggest a clear answer. There are advantages and disadvantages to the current organizational structure and deciding whether the board is still needed depends on how one evaluates the tradeoffs between them. Moreover, it is difficult to evaluate the advantages and disadvantages of the board structure. For example, the co-existence of a policy board and an executive agency provides citizen oversight of staff decisions and a forum for discussions among stakeholders. However, these hard-to-measure benefits must be weighed against the costs, confusion, and reduced public accountability that can result. We think the Legislature should periodically discuss these tradeoffs and assess the costs and benefits of having a board. We do not think, however, that it is sufficient to conclude that having a board is "a good thing." Advocates of having a board should press to ensure that the board focuses its attention on the most significant issues and operates as an effective decision making body.

---

20 The board currently exercises its review of staff decisions before actions are taken because they are the body authorized by statute to act.

21 A procedure for permittees and interested parties commenting on public notice to waive appeal would be necessary so as not to delay the issuance of non-controversial permits. Alternatively, the commissioner's action could be made final immediately, avoiding the potential delay on controversial actions. This would require the board to establish more formal procedures for hearing appeals and would also establish precedents for guiding future commissioners' actions.

AIR QUALITY DIVISION

Chapter 2

Minnesota companies emit more than 500,000 tons of air pollutants each year. These emissions pose health risks, contribute to acid rain and ozone depletion, and are unsightly. We asked:

- **Does Minnesota collect enough information on air emissions?**
- **How often does PCA conduct inspections of air polluters, and what types of enforcement actions does it take?**
- **Do all of Minnesota's large air polluters have permits, and does PCA operate an efficient permitting program?**

To address these questions, we interviewed PCA staff and representatives of private industry. We analyzed summary data from PCA's information systems, reviewed a sample of 23 violations issued by PCA, surveyed PCA permit engineers about their backlog of permit applications, and accompanied staff on a routine inspection. To better understand the views of regulated facilities, we surveyed a systematic random sample of facilities issued air quality permits during the past five years. Three-fourths of the organizations in our sample responded, and Appendix A contains a summary of survey responses.[1] Although vehicles account for a substantial portion of Minnesota's air pollution problems, our study focused primarily on stationary sources of pollution because these have been the focus of PCA's past regulation.

Overall, we conclude that PCA does not collect enough information to adequately determine ongoing compliance with air quality regulations. PCA collects too little data on actual emissions and should conduct more inspections. Although the Air Quality Division has developed a more aggressive enforcement program in recent years, it still places too much emphasis on dust and visible emissions, while some higher risk emissions have been subject to little ongoing oversight. PCA has a substantial backlog of air quality permit applications and could issue permits more efficiently by changing some internal procedures and updating state air quality rules. Although PCA has issued permits to many previously unpermitted facilities in recent years, there remain

---

1 We drew our sample from the 710 organizations issued permits from January 1985 to August 1990. We mailed 361 surveys; 12 were returned with incorrect addresses. Of the remaining 349, we received 261 responses.

hundreds of Minnesota companies that should have air quality permits but do not.

REGULATORY FRAMEWORK

The federal government began allocating funds to states for air pollution research and staff training in 1955. Congress passed the original Clean Air Act in 1963, but states and automobile manufacturers were slow to implement its provisions. As a result, Congress passed sweeping amendments to the Clean Air Act in 1970 at about the time the federal Environmental Protection Agency (EPA) was created. To address pollution-related health problems, the amendments required EPA to set uniform national air quality standards with a "margin of safety." EPA established "ambient" (or atmospheric) standards for the six most common air pollutants (called "criteria pollutants"), listed in the box at right.[2]

"Criteria Pollutants":

- Carbon Monoxide
- Sulfur Dioxide
- Particulates
- Ozone
- Nitrogen Oxide
- Lead

Under the Clean Air Act amendments of 1970 and 1977, the federal regulations governing a stationary pollution source depend on whether the source is (1) in a geographic area that is in compliance with ambient standards, and (2) a source that existed in 1970 or a new source. Figure 2.1 shows the standards that various types of sources must meet. Federal regulations apply to sources whose uncontrolled emissions exceed certain thresholds. For example, all new facilities with the "potential to emit" more than 250 tons of criteria pollutants a year are subject to federal standards.[3] State regulators calculate the

Figure 2.1: Federal Air Pollution Control Requirements

1. **New (or substantially modified) sources wishing to locate in areas in compliance with federal standards** must install "best available control technologies" and cannot contribute to significant degradation of existing ambient air quality.

2. **New (or substantially modified) sources wishing to locate in areas not in compliance with federal standards** must install technology consistent with the "lowest achievable emissions rate."

3. **Existing sources** must meet limits established by each state in a "state implementation plan." State plans must ensure compliance with federal ambient air standards.

Source: U.S. Clean Air Act.

2 EPA originally developed standards for a seventh pollutant (hydrocarbons), but the standards proved difficult to monitor and enforce.

3 Industries in one of 28 categories that have potential emissions greater than 100 tons a year are also subject to federal regulations. In areas not in compliance with federal ambient standards, all sources with potential emissions exceeding 100 tons a year must meet federal requirements.

potential to emit using conservative assumptions (such as non-stop, year-round operation) unless air quality permits have federally enforceable limits on hours of operation or materials used.

The 1990 amendments to the federal Clear Air Act require expanded regulation of air toxics.

All hazardous pollutants other than the common criteria pollutants are typically referred to as "air toxics." In 1989, Minnesota manufacturers released at least 59 million pounds of toxic chemicals into the air.[4] Federal standards exist for only eight of the hundreds of toxic air pollutants, so states have assumed responsibility for most air toxics regulation.[5] However, the Clean Air Act amendments passed by Congress in 1990 require EPA to regulate 189 air toxics, require toxic emitters to install better pollution control technology, and mandate EPA to develop additional restrictions based on health risk assessments.

The 1990 Clean Air Act amendments are the first major federal air pollution legislation since 1977. In addition to new limits on toxic emissions, the amendments require: new vehicle tailpipe emission limits, reductions in sulfur dioxide by Midwestern coal-fired utilities (thus reducing acid rain), and the addition of oxygenated fuels (such as ethanol) to gasoline in cities with carbon monoxide problems.

Supplementing federal regulation, Minnesota has had its own regulation of air pollution for more than two decades. In 1967, the Minnesota Legislature authorized the new PCA to recommend state air quality standards, which PCA implemented two years later. Today, EPA delegates responsibility for most federal air regulation programs to states and provides them with grants to operate programs. Minnesota's federal grant represents about one-third of PCA's air quality budget. Minnesota rules require air emission sources to obtain permits from PCA before constructing, modifying, or operating their facilities. The rules exempt certain small sources from permit requirements, notably sources with potential emissions of less than 25 tons per year. Minnesota's rules contain ambient standards (some are more strict than federal standards), emission standards, and, to a lesser extent, technology standards for pollution control equipment.

One of the goals of the 1970 Clean Air Act amendments was nationwide compliance with federal ambient air standards by 1975. Congress has extended this deadline several times due to widespread noncompliance. The Clean Air Act prohibits construction of large new emission sources in regions that do not comply with federal air quality standards, known as "nonattainment

4 Minnesota Department of Public Safety, *1989 Toxic Chemical Release Inventory* (September 1990), 11. The total only includes emissions from companies with 10 or more employees, and the data is self-reported.

5 The eight toxics regulated under the National Emission Standards for Hazardous Air Pollutants (NESHAP) of the Clean Air Act are asbestos, benzene, beryllium, coke oven emissions, inorganic arsenic, mercury, radionuclides, and vinyl chloride.

areas."[6] Companies locating or expanding in nonattainment areas require more permit-related testing and paperwork than do other companies, thus increasing state workloads.

All parts of Minnesota currently meet federal ambient standards for ozone and nitrogen oxide.[7] Figure 2.2 summarizes Minnesota's current nonattainment areas for carbon monoxide, lead, sulfur dioxide, and particulates. The

Figure 2.2: Areas of Minnesota Not in Compliance with Federal Ambient Air Standards

Carbon monoxide: Twin Cities metropolitan area, St. Cloud, Rochester, and Duluth

PCA staff believe that the vehicle emissions testing program starting in 1991 will bring the Twin Cities area into compliance. There have been no recent ambient violations in St. Cloud and Rochester, and EPA intends to redesignate these areas as compliant with federal standards. PCA staff believe the Duluth violation was an isolated problem related to highway construction, but EPA staff think the problem may be more widespread.

Sulfur dioxide: Twin Cities metropolitan area

Refinery emissions caused most of the violations several years ago. PCA staff told us there have been no recent violations and they have been trying to get EPA to redesignate this nonattainment area for more than five years. EPA has tabled action on this SIP revision pending resolution of a federal district court case regarding stack heights that can be used for air modeling purposes (the case does not involve a Minnesota company).

Fine particulates:* St. Paul, near Mississippi River

The problems were caused mostly by barge traffic; PCA is developing proposals to address the problem.

Total suspended particulates (TSP): Numerous parts of the state

EPA no longer regulates total suspended particulates, but it will not lift nonattainment status on areas with past problems until PCA promulgates rules for fine particulates. Cities that had primary violations of TSP standards are Minneapolis, St. Paul, St. Louis Park, and Duluth. Lesser violations were recorded in parts of Anoka, Hennepin, Ramsey, Washington, Dakota, St, Louis, Koochiching, and Goodhue counties.

Lead: Some or all of Dakota County

EPA and PCA are still discussing how to define the noncompliant area. Most of the ambient air problems are caused by a smelting company.

*"Fine particulates" are dust particles smaller than 10 microns.

6 In practice, companies have been able to locate in these areas by reducing their size or accepting limits on operating hours.

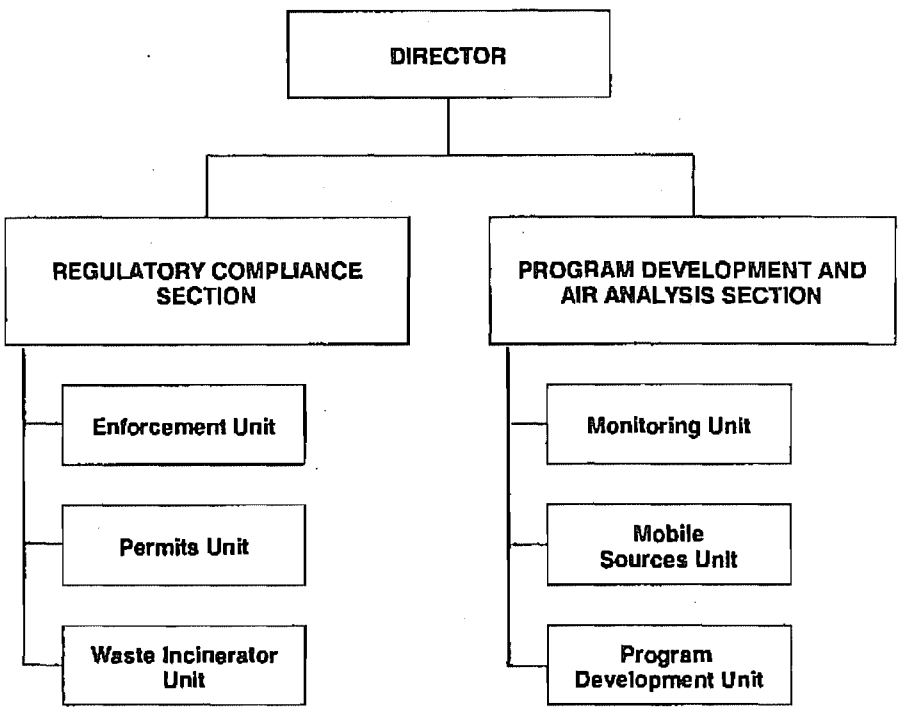
7 Actually, the state has "unclassified" attainment status for ozone. This means that there were some past violations of federal standards that were not significant enough for EPA to subject Minnesota companies to stricter standards.

Clean Air Act requires each state with nonattainment areas to submit "state implementation plans" (SIPs) for EPA approval that demonstrate progress toward compliance. The SIP is an ongoing compilation of state rules, permits, and enforcement actions.[8] Unfortunately, there has been considerable tension between EPA and PCA regarding Minnesota's SIP, resulting in some permit delays and lost staff time. EPA administrators admit that their past actions on SIP modifications have been too slow, sometimes taking several years. But EPA staff also told us that PCA staff turnover and Minnesota's lengthy rule making process have contributed to delays.

ORGANIZATION AND STAFFING

Figure 2.3 shows the organization of PCA's Air Quality Division. The Regulatory Compliance Section issues permits to stationary pollution sources and enforces the terms of these permits. Because of public concerns about waste incinerators, the section has a separate unit that issues and enforces waste incinerator permits. However, for the most part, the tasks of incinerator staff are the same as other permit and enforcement staff in the division.

Figure 2.3: Organization of PCA's Air Quality Division



8 The federal SIP for Minnesota includes citations of many rules that have since been revised. PCA staff have been trying to get EPA to clarify which rules are part of the SIP.

Staff in the Program Development and Air Analysis Section oversee ambient air monitoring, conduct technical studies, and write rules. To help regulate carbon monoxide emissions from vehicles, they also issue "indirect source permits" to builders of developments expected to generate large amounts of traffic. PCA recently created the Mobile Sources Unit to oversee the Twin Cities metropolitan area's vehicle inspection and maintenance program. PCA has hired a contractor to conduct annual inspections of vehicles, starting in mid-1991.[9]

Figure 2.4 identifies the functions of individual staff in the division. The state general fund pays for about one-third of the division's positions, and the federal air quality grant pays for another one-third. The amount of the federal grant has not increased in the last 10 years. Permit fees support an additional 11 positions. The vehicle inspections program is funded by a loan from Minnesota's motor vehicle excise fund that must be repaid from fees charged to vehicle owners. A stipulated penalty levied against Koch Refinery pays for three staff who operate an ambient monitoring network in the area near the refinery. Other revenue sources include the Legislative Commission on Minnesota Resources (two positions), the state superfund (one position), the Metropolitan Airports Commission (one position), and the motor vehicle excise tax used oil fund (one position).

Figure 2.4: Air Quality Division Staffing

Number of Staff	
1	Division director
1	Assistant Division director
3	Clerical staff (includes 1 supervisor)
	Regulatory Compliance Section
1	Manager of Regulatory Compliance Section
4	Clerical staff (includes 1 supervisor)
1	Head of Enforcement Unit (supervises 10 non-incinerator enforcement staff in central office)
10	Central office enforcement staff (6.4 FTE do "general" enforcement of stationary pollution sources; 1.0 FTE administer the state's NESHAP program, primarily oversight of asbestos removal; 1.0 FTE responds to complaints and enforces open burning rules; 1.0 FTE maintains the section's information systems; 0.4 FTE enforces rules governing tampering with vehicle emission control equipment; 0.2 FTE reviews and compiles continous emission monitoring data from companies)
2	Regional enforcement staff (Rochester and Duluth offices)
1	Head of Waste Incinerator Unit (supervises 6 staff who issue and enforce municipal, medical, and other incinerator permits)
3	Engineers who issue incinerator permits and write incinerator rules (currently, about 0.7 FTE work on rules)

9 The Twin Cities area is one of the last large metropolitan areas in the nation to implement an annual vehicle emissions inspection program.

Figure 2.4: Air Quality Division Staffing, continued

Number of Staff	
	Regulatory Compliance Section, Continued
2	Staff enforce incinerator permits
1	Engineer is conducting a LCMR-funded study of medical waste incinerators
1	Head of Permits Unit (supervises 12 staff who issue permits to non-incinerator air pollution sources)
12	Permit engineers (8.5 FTE issue permits to stationary air pollution sources; 2.0 FTE review stack tests; 0.5 FTE administers the continuous emissions monitoring quality assurance program; 0.5 FTE reviews emissions data from nuclear power plants; 0.5 FTE works on rules)
	Program Development and Air Analysis Section
1	Manager of Program Development and Air Analysis Section
3	Clerical staff (includes 1 supervisor)
1	Head of Air Quality Monitoring Unit (supervises 17.5 staff who monitor ambient air conditions)
6	Members of the "air monitoring team" (sample collection and analysis, lab monitoring, equipment repair; 2 of the 6 staff work on air toxics)
1	Staff does air monitoring in northeastern Minnesota
1	Staff maintains the ambient air database
0.5	Staff analyze ambient data and issues reports on monitoring equipment
3	Quality assurance staff (1 does quality assurance checks on criteria pollution ambient monitoring; 1 does instrument calibrations for ambient air monitors; 1 reviews company-submitted air quality reports, assesses landfill air quality, and does quality assurance for acid rain monitoring)
3	Staff collect and analyze data from an air monitoring system near Koch Refinery in Pine Bend
4	Acid rain staff (1 team leader, 1 person who operates ambient monitors, 1 aquatic expert, and 1 data analyst
1	Head of Mobile Sources Unit (supervises 6 staff who work on issues related to vehicle emissions)
3	Staff work on the new vehicle inspection and maintenance program (1 team leader, 1 consumer advocate, 1 person developing training and a newsletter for auto mechanics)
1	Staff is doing a baseline study of carbon monoxide emissions (required by EPA)
2	Staff issue indirect source permits for large developments that will generate large amounts of traffic
1	Head of Program Development Unit (supervises 15 people who develop rules, collect data, and work on special projects)
6	Air toxics staff (1 team leader; 1 LCMR-funded staff person who is studying dioxin near Elk River and emissions from waferboard facilities; 3 staff work on rules; 2 staff do risk assessments related to permit issuance)

Figure 2.4: Air Quality Division Staffing, continued

Number of Staff	
	Program Development and Air Analysis Section, Continued
1	Staff revises and tracks air quality rules
1	Staff works with EPA to keep Minnesota's State Implementation Plan up-to-date
2	Staff work on noise issues (1 represents PCA on issues related to the Twin Cities airport; 1 person is a liaison with local governments and does noise monitoring and enforcement)
2	Staff do air quality modeling and review modeling done by companies' air quality consultants
1	Staff person is writing rules governing sandblasting of lead paint on houses and bridges
1	Staff maintains the state's "emissions inventory" (companies self-report their emissions to PCA every two years)
88.5	TOTAL STAFF

Note: Staffing as of November 1990.

To determine staffing changes over time, we reviewed division organization charts and PCA personnel data. We found that:

- **The division's authorized complement increased from 72 in 1988 to 105 currently, with most of the increase devoted to new programs.**

For example, the Legislature authorized 16 new positions for the vehicle emissions inspection program during this time. The new incinerator permitting and enforcement unit had a net gain of six positions, and the air toxics team increased by five. In contrast, the number of non-incinerator permit positions remained constant during this time, and the number of non-incinerator enforcement staff increased by just two.

Based on our review of organization charts, the Air Quality Division seems to have had less staff turnover recently than other PCA divisions. Still, according to our survey of organizations with air quality permits, 27 percent of respondents said they have experienced problems in the past three years because of turnover in the Air Quality Division.

One staffing issue that the 1991 Legislature should carefully consider is PCA's staffing for its vehicle inspection program. The Legislature has authorized 16 positions for the program, and PCA expects to fill them all by the program's scheduled start-up in July 1991.[10] We found that:

- **Most of the vehicle emissions staff are doing tasks other than those originally authorized by the Legislature.**

10 As of January 1991, seven positions remain to be filled.

Vehicle emissions staff are located in the central office rather than at inspection sites.

The 1988 Legislature authorized four positions for the program, and PCA asked the Legislature for 30 more in 1989. About half of the requested positions were for central office staff, and the other half were for "waiver officers" at the region's inspection sites. The 1989 Legislature approved 12 new positions for the purpose of placing one waiver officer at each of the inspection sites.[11] PCA did not get legislative approval for the additional central office administrative and enforcement staff it had requested. However, after the 1989 legislative session, PCA decided that it could not properly plan and operate the vehicle emissions program without more central office staff. Thus, PCA required its inspection contractor to do the duties that it originally planned to assign to its waiver officers. PCA has used all of the positions authorized in 1989 for central office staff, although it hopes that at least two of these staff can eventually serve as consumer advocates at inspection sites.[12]

We think that the 1989 Legislature expected that newly-authorized staff would work at inspection stations, not in the central office. Thus, PCA's current use of staff is not consistent with legislative intent. While PCA may be correct in believing that its vehicle inspection program cannot succeed without its current number of administrative staff, it has not yet convinced the Legislature of this.[13] We recommend that:

- **The 1991 Legislature should reconsider PCA's staffing needs for the vehicle inspection program, including a review of positions already authorized.**

TRENDS IN AMBIENT AIR QUALITY

Although PCA is the state's primary regulatory agency for air pollution, it is important to note that PCA's control of the state's air quality is limited. First, until recently PCA did not extensively regulate mobile sources of pollution, which account for much of the state's carbon monoxide and air toxics emissions. Second, ambient pollution levels depend on the types of fuels used, production processes, and the health of the economy. PCA has little control over

11 The Legislature made the number of positions contingent on the number of inspection stations operated, with a maximum of 15 waiver officers. PCA decided to have 11 stations, so the appropriations bill authorizes 11 waiver officers plus one supervisor. "Waiver officers" have authority to excuse some owners of noncompliant vehicles from getting repairs, and inspect noncompliant vehicles for evidence of tampering with emissions equipment.

12 The nine staff now funded by the vehicle inspection account are planning program implementation, monitoring contractor activities, developing baseline carbon monoxide information for EPA, providing information to the public and vehicle repair technicians, and preparing program descriptions for EPA approval. Before program start-up, PCA will add central office staff to audit contractor performance, monitor the quality of inspections, process data, and oversee companies that wish to test their own fleets of vehicles. PCA also used the vehicle emissions account to pay for 10 person-months of work in 1990 for two other staff. However, these two staff have not been able to devote the time to the program originally anticipated, and PCA expects that about eight person-months of work already paid for by the account will be done later in 1991.

13 In February 1990, the division informed one member of the House Appropriations Committee of its proposal to hire central office staff and have the contractor issue waivers.

these factors. Third, federal regulations have historically influenced air quality more than state regulations.

Nevertheless, the Clean Air Act made each state responsible for achieving compliance with ambient standards, so it is appropriate to review recent pollution trends. PCA issued regular reports on air quality during the 1970s, but it now does virtually no systematic analysis of air quality trends. PCA issued its most recent trend report in 1982.

Much of PCA's air monitoring equipment is old and unreliable.

To assess Minnesota's air quality, PCA operates 41 ambient monitors around the state. According to staff, the present number of monitors is the lowest number in 15 years, reflecting reductions due to operating costs.[14] Most of PCA's ambient monitors collect information on three or fewer criteria pollutants.

Air monitors usually have a useful life of five to seven years.[15] We found that half of Minnesota's current monitors exceed seven years of age. The aging equipment has resulted in frequent repairs and periods of unreliable data. Staff told us that acceptable monitors should be operational no less than 90 percent of the time. During 1989, PCA's sulfur dioxide monitors operated properly 87 percent of the time, and nitrogen oxide monitors operated properly 80 percent of the time. PCA has provided EPA with a plan for replacing aging equipment, but has not yet identified funding sources for many of the proposed acquisitions.

Table 2.1 summarizes recent trends in air quality violations measured by PCA's ambient monitors. Primary violations are those that endanger human health. Most of the violations represent excessive pollution levels at a measurement site over a period of 8 or 24 hours. The table does not document consistent improvement or deterioration in air quality over the past few years, but it indicates that carbon monoxide and particulates account for most of the detected violations. Figure 2.5 shows trends in actual emissions from stationary sources, as measured by periodic PCA surveys. The figure shows that sulfur dioxide and particulate emissions declined in recent years, while nitrogen oxide and carbon monoxide emissions did not change significantly.

PERMIT ISSUANCE

Minnesota law grants PCA broad authority to issue permits for facilities that emit air pollutants. PCA may issue, extend, or deny permits "under such conditions as it may prescribe for the prevention of pollution, for the emission of

14 The most recent EPA review of PCA's monitoring program indicated that the number and location of PCA's monitors meet federal standards. Also, the reduced number of PCA monitors has been offset by an increase in company-operated monitors. PCA staff are responsible for quality control for both PCA and company monitors.

15 U.S. General Accounting Office, *National Air Monitoring Network Is Inadequate* (Washington, D.C.: November 1989), 24.

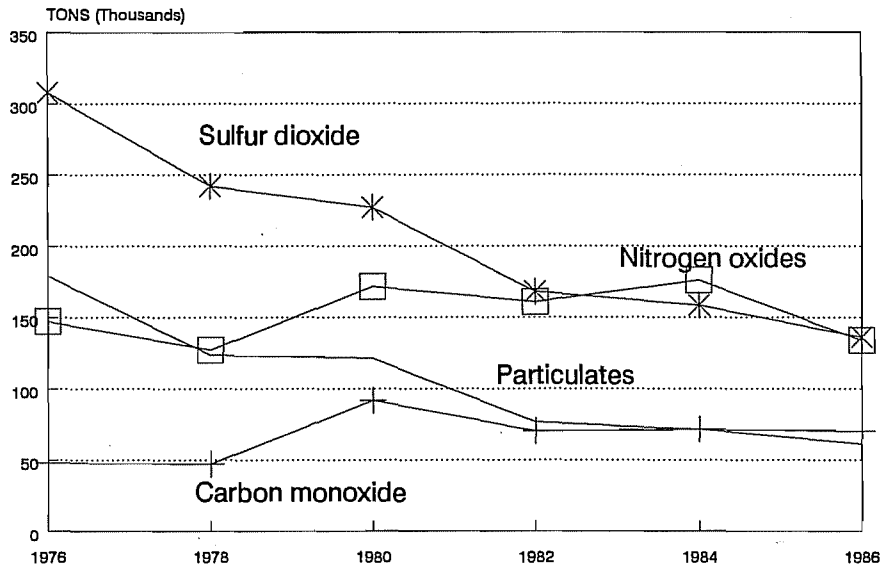
Table 2.1: Minnesota Violations of Federal Primary Ambient Air Standards, 1985-89

	Number of Violations				
	1985	1986	1987	1988	1989
Total suspended particulates	5	8	11	23	6
Carbon monoxide	20	6	16	9	14
Ozone	0	0	0	2	1
Lead	0	1	0	2	0
Sulfur dioxide	0	0	2	1	0
Nitrogen oxides	0	0	0	0	0

Source: PCA Air Quality Division.

NOTE: For some pollutants, Minnesota has more restrictive primary standards than EPA. During this five-year period, there were 21 occasions when state carbon monoxide standards were violated but the federal standards were not. There were four state ozone violations and one sulfur dioxide violation.

Figure 2.5: Tons of Emissions From Major Point Sources, 1976-86



SOURCE: PCA Air Quality Division

NOTE: Figure includes emissions inventories from companies emitting more than 25 tons of a criteria pollutant.

air contaminants, or for the installation or operation" of emission facilities.[16] The Air Quality Division issues permits for five-year periods, and state rules require sources with permits to apply for permit reissuance at least 180 days before the existing permit expires. Sources that have submitted timely applications for reissuance may continue to operate under an expired permit unless the commissioner determines that the permittee is not in compliance with the permit or caused delays in reissuance.[17] Prior to 1985, sources obtained permits for installation and operation of individual pieces of air pollution control equipment. In 1985, PCA began issuing permits that covered all equipment at a facility, and set a goal of issuing these "total" permits to all air quality permittees by 1990.

To issue a permit, PCA engineers identify a source's production processes and pollution control equipment, its potential emissions under worst-case assumptions, and the need for additional pollution control equipment based on federal standards. For some permits, PCA staff calculate the impact of emissions on ambient air quality through modeling techniques. Sources with potential emissions of more than 25 tons per year must have permits, except as exempted by state rules.[18] Table 2.2 shows the number of permits issued, reissued, or modified in recent years. In addition to these actions, staff approved 30 to 90 minor permit amendments each year.

Table 2.2: Air Quality Permits Issued, Reissued, or Modified, FY 1986-90

	1986	1987	1988	1989	1990
Permit actions*	143	195	105	132	135

Source: Air Quality Division Compliance Data System.

*Does not include minor permit amendments.

Over 100 permits have passed their original expiration dates.

As of August 1990, 823 Minnesota emission sources had air quality permits. Using the division's information system, we determined that 710 of these sources received their most recent permit between January 1985 and August 1990. Because permits last for five years, we assumed that most of these permits are active. There were an additional 113 cases in which sources' most recent permits were issued before 1985, thus having passed their five-year expiration dates. It is possible that each company with an expired permit had submitted to PCA a timely application for renewal, thus qualifying the expired permit for an extension. However, PCA does not formally notify companies that extensions have been granted, nor does it have its own records of extensions.[19] Thus, it is unclear what portion of the permits older than five years are still active.

16 *Minn. Stat.* §116.07, Subd. 4a.

17 *Minn. Rules* Ch. 7001.0160.

18 *Minn. Rules* Ch. 7001.1210.

19 PCA does send a letter to companies that acknowledges receipt of applications and asks them to continue operating under their existing permits. But the letter does not indicate whether the application was timely or complete, nor whether the facility complied with the terms of their existing permit.

We also found that:

- **The division does not have a tracking system for permit applications that meets the needs of management or regulated facilities.**

Permit tracking is weak.

The supervisor of the division's permit unit maintains a handwritten, chronological log of permit applications and a separate log of dates when draft permits passed his review. But these logs do not provide the division with systematic means of determining the permit application backlog at a given time, the amount of time applications have been under review, or the number of applications that are at various stages in the application process. In addition, without a computerized tracking system, clerical staff are unable to inform permit applicants of the status of their applications. Thus, applicants have to talk directly to the engineers working on their permits to determine this. Of PCA's four main divisions, the Air Quality Division has the most deficient permit application tracking system.

We recommend that:

- **PCA should develop a computerized tracking system that indicates the status of permit applications.**

Also, at the time permittees apply for renewals, PCA should formally determine whether the application was timely, thus qualifying the existing permit for extension. Staff should annually provide the PCA Board with information on the number of companies operating with extended or invalid permits.

Permit Backlog

An efficient permitting process is important for several reasons. First, businesses want permits in a timely manner so they can start their operations or change production methods on schedule. Unnecessary delays in permit issuance can result in financial losses. Second, efficient permitting enhances environmental protection. New permits sometimes contain stricter standards than earlier permits, and many businesses are required to conduct demonstrations of compliance with emission regulations at the time of permit issuance. Permit delays can postpone these standards and compliance demonstrations. Third, some business representatives told us that, for liability purposes, they prefer to operate under the terms of a current permit, rather than an expired permit that has been extended. Finally, an efficient, understandable permitting process makes PCA a more credible regulator.

The Air Quality Division has internal guidelines for the time it should take to issue various types of permits. For existing facilities, the guidelines suggest that "normal permit issuance time" is 30 to 120 days if the application does not require ambient air modeling, air toxics reviews, public notice, and PCA Board action. The guidelines suggest that permits for existing sources might take up to 280 days if these additional steps are required. Factors beyond PCA's control can affect permit issuance time. For example, if a permit appli-

cant fails to provide PCA with necessary information or is found to be in violation of an existing permit, there can be significant delays in permit issuance.

We examined the amount of time PCA takes to act on permit applications. For permits issued, reissued, modified, or amended from May through July 1990, we found that:

- **The median time from the date of application to final PCA action was three months.**

Of the 52 actions in which we were able to determine the length of the permitting process, 10 took longer than the 280-day maximum suggested in PCA guidelines. One permit renewal (Metropolitan Waste Control Commission, discussed in the next section) took more than three years.

We supplemented our review of recently-issued permits with a review of permit applications that have not yet received final approval. As noted earlier, the division has no systematic means of determining this backlog, so in August 1990 we asked each permit engineer to provide us with information on the permits they were working on. We found that:

- **PCA staff have a backlog of about 250 permit applications, and nearly half are at the earliest stage of the permit process.**

The division has a significant permit application backlog.

As noted earlier, PCA issues, reissues, or modifies an average of 140 to 150 permits each year. Thus, the present permit application backlog represents a minimum of 18 months of work.

As a first step in the permitting process, PCA reviews applications to ensure that all necessary information has been provided. The division's guidelines suggest that this should take up to 15 days, although the applicant may then be asked for more information. Based on our survey of permit staff, at least 43 percent of applications in the backlog were still awaiting completion of this initial stage. In contrast, only eight percent of the applications were undergoing the final stages of review (public notice, management review, or board review).

We found that the median time that applications had been under review at the time of our survey was seven months, although some applications were several years old.[20] Thus, our earlier finding that completed permits took an average of three months to process in mid-1990 understated the length of application reviews for many companies. For those applications that were not yet "complete"—that is, all information had not been submitted or PCA staff had not reviewed the applications for completeness—the median time from the date of application was seven months. For those applications that had advanced beyond the initial "completeness" review, we found that two-thirds were not within PCA's internal time guidelines. In sum, most of the backlogged permit applications are taking longer to process than PCA's internal guidelines would suggest.

20 Fifteen of the 250 applications in the backlog were submitted in 1987 or earlier.

In part, the lengthy process reflects the nature of the applications in the backlog. Table 2.3 compares the type of applications in the backlog with those that PCA acted on from May to July 1990. Note that the backlog contains more large facilities, fewer minor permit changes (modification or amendments), and more applications subject to federal regulations.

Table 2.3: Comparison of Permits Issued by PCA With Applications Awaiting Action

	Percent of May-July 1990 Permit Actions (N = 60)	Percent of Applications in PCA's Backlog (N = 257)
Large sources*	27	36
Modifications or amendments	48	16
Subject to federal regulations	12	20

Sources: For May-July 1990 actions, we used PCA permit routing sheets and the permit supervisor's log of completed permits. For applications in the backlog, we used our August 1990 survey of PCA permit staff.

*These are A1 sources, which have potential or actual emissions of criteria pollutants exceeding 100 tons per year.

The lack of timely permit issuance is an important issue with regulated facilities, as indicated by our survey of companies that were issued permits since 1985. Table 2.4 shows that PCA's timeliness of action received only a "fair" or "poor" rating from half the respondents.[21] When permittees were asked what one improvement in the Air Quality Division they would most like to see, about one-fourth wanted a faster permit process and another one-fourth

Table 2.4: Permittee Ratings of PCA Staff

	Percent of Permittees Who Rated Staff:		
	"Poor" or "Fair"	"Good" or "Excellent"	Don't Know
Technical Competence	23	59	18
Ability to provide answers to questions	31	56	13
Timeliness	49	37	14

Source: September 1990 Program Evaluation Division survey of companies issued air quality permits since 1985.

NOTE: N = 261.

21 Some typical comments from respondents included: "Our last permit took over twice as long to get as anticipated. Two to three weeks were consumed to get it typed and signed." "We were given a verbal OK right away on the new equipment we installed this year, but it took a long time for the paperwork to follow. This causes our top management a lot of concern."

wanted PCA to clarify its expectations of companies seeking permits (Table 2.5). Permit delays are apparently causing more than just inconvenience because:

- **23 percent of the permittees we surveyed said that permit delays have caused them financial hardships.**[22]

Permittees want PCA to be more flexible, timely, and clear about expectations.

Table 2.5: Permittee Survey Question: "If you could do one thing to improve the operations of PCA's Air Quality Division, which of the following would it be?"

Percent*	
7.3%	Improve technical competence of staff
6.1	Reduce staff turnover
24.0	Reduce the time it takes to process permit applications
23.1	Increase the flexibility of pollution regulations
5.1	Increase the predictability and consistency of enforcement
23.6	Clarify PCA's expectations of permittees and companies seeking permits
10.8	Other or no response
100.0%	

*N = 261. We prorated the responses of 11 respondents who provided more than one answer. For example, if two answers were given, each counted as half a response.

Another effect of the backlog is that many companies are operating under old permits. PCA has not been able to meet its 1985 goal of issuing "total" permits to all facilities by 1990, that is, permits for entire facilities rather than individual pieces of equipment. Also, PCA has not established a five-year permitting cycle. For example, Northern States Power has some of the largest air emission plants in the state, but several do not have recent permits, including the Black Dog plant (the most recent permit was issued in 1984), High Bridge plant (1982), Riverside plant (1983), and Sherburne County units 1 and 2 (1981). Sherburne County Unit 3 received an installation permit in 1983 but has never received a total permit.[23]

Reasons and Remedies for PCA's Permitting Problems

To determine reasons for the air quality permit delays and backlog, we discussed individual cases with PCA staff, surveyed PCA's permit staff, and solicited comments from regulated facilities. As indicated by the following examples, the reasons for particular delays are complex and widely varied:

22 About 64 percent said delays have not caused financial hardship, and 13 percent were not sure or did not respond to the question. Larger sources were somewhat more likely to report hardship than smaller sources.

23 Another plant (Inver Hills) received its first permit in 10 years in 1990. PCA staff noted that EPA's lengthy process for amending state implementation plans has increased the time needed to issue these permits.

The reasons for permit delays are complex and widely varied.

- The Metropolitan Waste Control Commission applied for an air quality permit in late 1986 and received the permit in mid-1990. Permit action in this case was delayed by PCA staff turnover and a maternity leave, diversion of PCA staff to work on garbage incinerators, promulgation of new EPA rules during the middle of the permitting process, permittee concerns about the locations PCA selected for air monitoring devices, and PCA discovery of modeled violations of ambient air standards late in the permitting process.

- PCA staff were in the process of drafting a renewed permit for Sheldahl Corporation in 1989 when a public report on companies' toxic air emissions indicated that Sheldahl emitted 400 tons of methylene chloride, a suspected carcinogen, the previous year.[24] The report raised concerns among Northfield residents, who felt the draft permit did not adequately address the toxic emissions. PCA had no air toxics rules to serve as a basis for permit conditions, but it was in the process of developing air toxics "guidelines." In an effort to comply with PCA's drafted guidelines, the company conducted a health risk assessment of its air toxics and evaluated several options for reducing emissions. Eventually, PCA and Sheldahl negotiated a draft permit calling for elimination of methylene chloride emissions by the year 2000, but negotiating the schedule for toxic reduction took several months.

- The Sherburne County Northern States Power plants are among the largest and most complex air pollution sources in the state. The permits of two of the units expired in 1986, and the third unit was constructed in 1987. NSP submitted permit applications in 1986 but did not complete compliance testing for the sites until 1990. The existing units have been operating under variances from the state's opacity standard for 10 years, and PCA asked NSP to consider installation of opacity control equipment. Instead, NSP will try to get a site-specific variance from Minnesota's opacity rule from EPA, which will likely take a minimum of one year.[25]

We found many instances in which delays in permit issuance appeared to be beyond the control of PCA permit staff. EPA actions (or inactions), company recalcitrance, and pending enforcement actions have contributed to permit delays in many cases. But it is also clear from our surveys of PCA staff and permittees that:

- **There is room for improvement in the Air Quality Division's management of permit issuance.**

We heard many suggestions for improving the permit process. Based on our review of these suggestions, we think PCA should:

24 Starting in 1989, federal laws required large manufacturing companies to disclose toxic chemical emissions annually.

25 EPA disapproved Minnesota's rule for opacity variances in 1988, and until PCA promulgates a rule that satisfies EPA, variances must be granted individually by EPA.

1. Clarify expectations of companies through better application forms and instructions.

There are many ways to improve the air quality permitting process.

One of the reasons that many permit applications in the division's backlog are in the earliest stages of review is that companies submit insufficient information in applications. Several PCA staff told us that current application forms should be redesigned and include clearer instructions. One-fourth of the companies responding to our survey of permittees said that the single most important change needed in the Air Quality Division is clarification of PCA's expectations.

2. Remind companies when it is time for permit renewal.

To encourage timely application for renewals, the Water Quality Division has sent reminder letters to companies nine months prior to permit expiration. In contrast, there has been no centralized reminder system in the Air Quality Division, nor a computer program indicating which permits are coming due. Reminder letters would probably reduce the number of last minute, incomplete applications from permittees.

3. Develop a policy and procedures manual for permit staff.

Permittees and PCA staff both expressed concerns to us about consistency in permit practices, including the methods for making calculations of emissions. The division has never had a written procedures manual, and new staff often have a difficult time learning the process for permit issuance.

4. Update state air quality rules.

Minnesota's air quality rules should be updated.

Permit staff told us that they spend considerable time negotiating permit conditions with companies on a case by case basis because rules are outdated or not comprehensive. This has been particularly true for air toxics regulation, but it is also true for some of the rules governing criteria pollutants. For example, state rules do not indicate the time periods for which sulfur dioxide emissions will be averaged (to determine if there are violations), so PCA negotiates this case by case; this has been one reason for delays in issuing recent power plant permits.

Most of the emission limits in state rules were developed more than 10 years ago when pollution control equipment was less sophisticated. Thus, some current emission standards are very lenient compared to the capabilities of current equipment. Because many of the present emission rules do not effectively control emissions, staff sometimes develop models during the permit process to ensure that emissions will not violate ambient standards. This lengthens the permit process. PCA staff told us that most modeling for small facilities in parts of the state that meet federal air quality standards would be unnecessary if the state's emission rules were updated. It is worth noting that, in contrast to other PCA divisions, the Air Quality Division did not have a full-time person solely assigned to rule revision and tracking until 1989.[26] PCA

26 The division's other six rules staff are working on rules for air toxics, lead paint, and incinerators, as well as state implementation plan revisions.

staff also noted that past state air quality rule making was controversial, lengthy, and required considerable staff time.

5. **Reduce the time it takes to get permits typed.**

PCA staff told us that it is not uncommon to wait two weeks or more for permits to be typed. It is possible that additional clerical support (or a voice mail system to reduce clerical phone interruptions) might reduce the backlog more than additional professional staff.

6. **Make better use of computer resources.**

Staff suggested that some permit calculations now done manually could be done more efficiently on computer. Also, review and editing of draft permits by supervisors and managers could be done on computer, rather than on copies typed by clerical staff.

7. **Reduce the amount of time permit staff spend doing non-permit activities.**

Permit engineers collect air permit fees from companies, complete quarterly reports on compliance with permit requirements (this task seems more appropriate for enforcement staff), and do some tasks that are clerical in nature.

8. **Refer more permit process violators to enforcement staff.**

Once the Air Quality Division ensures that permit applicants clearly understand the requirements for getting a permit, permit staff should refer recalcitrant companies to enforcement staff for followup. Currently, it is rare for companies to get notices of violation for failure to meet these process requirements.

9. **Set deadlines for air studies.**

Permit staff sometimes require companies to conduct studies of their toxic emissions prior to development of a draft permit, but there are typically no deadlines for these studies. We reviewed several cases in which the permitting process was lengthy because PCA staff said they were waiting for the applicant to complete a study.

10. **Reconsider the permit requirements for sources with minimal emissions.**

State rules require most sources with the potential to emit more than 25 tons to have permits. Some PCA staff think the environmental threats of small polluters are too limited to justify this threshold and note that current regulations have little or no impact on the emissions of small polluters. Also, we heard suggestions that PCA extend the length of permits beyond five years for sources that are subject to state but not federal regulation (such as those regulated solely for odor emissions).

Some ideas suggested to us would probably not result in a significantly faster or better permit process. For example, some staff and permittees suggested

that the division reduce the number of people signing off on permits. Permit routing sheets enabled us to examine the time required for review by the top two levels of Air Quality Division management; all permits go through at least one additional level of review that we were not able to track. For permits issued in May to July 1990, most management review periods were brief. Top management took less than seven days to review about 80 percent of the applications, and the longest time required for top management review was 16 days. While it might be possible in certain cases to reduce the time spent reviewing permits, division managers strongly believe that these reviews improve permit consistency and quality.

Also, at the outset of our study, some people suggested to us that PCA could use staff more efficiently if its permit reviews focused more on emissions and less on the pollution control technology used.[27] We found that most of PCA's regulation of technology is federally mandated and could not be eliminated from permit reviews.

We think the Air Quality Division has improved the efficiency of the permit process in recent years, and several permittees complimented the hard work of staff. But we think there are still ways to use current staff more efficiently while making the permit process more reasonable for regulated facilities. We recommend that:

- **PCA should report to the 1992 Legislature on actions it has taken to address the permit application backlog. At a minimum, PCA should improve the materials it sends to potential permittees, including application forms. Also, PCA should conduct a comprehensive review of Minnesota's air quality rules and include in its report to the Legislature a plan for making necessary revisions to outdated rules.**

- **The PCA Board should receive annual updates on the permit backlog and the time required to issue permits.**

PCA should explore internal efficiencies and staff reallocations before seeking new permit staff.

PCA may need an increase in staff to address the application backlog, revise current rules, and maintain a five-year permitting cycle. Additional permit staff would be especially necessary if the division decided to make stronger efforts to issue permits to emission facilities that have never applied for permits, as discussed in the next section. However, before authorizing new staff, we think the Legislature should receive assurances that PCA managers have considered staff reallocations within the agency and that internal efficiencies are being fully explored. As noted later in this chapter, PCA should also consider changes in its permit fee structure, since fees do not fully recover the cost of issuing permits.

Finally, as discussed more fully in Chapter 6, the Legislature may wish to consider the future impact of the 1973 Minnesota Environmental Policy and Rights Act on the permitting process.[28] The act says that PCA cannot issue a permit which allows "materially adverse effects" on the environment if "feasi-

27 Most of Minnesota's large sources are subject to both emission and technology restrictions.

28 *Minn. Stat.* §116D.

ble and prudent alternatives" exist. In the past, Air Quality Division staff have rarely reviewed "alternatives" if a company was able to comply with existing regulations. But a September 1990 memo from the Attorney General's office to the PCA Board suggested that compliance with regulations does not eliminate the statutory requirement to review alternatives.[29] If PCA begins conducting such analyses for routine permits (as it is now doing for Dakota County's proposed solid waste incinerator), the permit process could be lengthened considerably.[30]

Pollution Sources Without Permits

Hundreds of air pollution sources, including some emitting toxic substances, do not have permits.

In addition to the many facilities whose old permits have been extended pending approval of new ones, there are many facilities that require permits but have never applied for one. We reviewed information in PCA's air quality database and found that:

- **The Air Quality Division is aware of about 300 sources that should have air quality permits but do not.[31] In addition, the division has information on at least 400 additional sources for which staff have not yet determined the need for a permit.**

Among sources with the potential to emit more than 100 tons of criteria pollutants annually (known as "A1" sources), PCA records identify 64 that have never been issued a permit. We identified 14 of these large facilities that have applied for permits, but the remainder apparently have not.[32]

Many companies that emit air toxics do not have permits, largely because of the lack of federal or state air toxics rules. PCA has been writing air toxics permit conditions on a case by case basis since 1985, although state air toxics rules are not scheduled for completion until 1992. We learned that:

- **Of Minnesota's 33 top emitters of carcinogenic compounds, 19 do not have air quality permits, and only 5 have applied. Of the 66 top emitters of noncarcinogenic toxic compounds, 40 do not have permits, and only 10 have applied.[33]**

It is likely that few of these unpermitted sources will receive permits before PCA promulgates air toxics rules in 1992, so it is worth noting that these sources will eventually add to PCA's already sizable permit backlog. PCA's

---

29 Memo from Ann M. Seha, Special Assistant Attorney General, to Pollution Control Agency Board, regarding Dakota County incinerator permit application, September 24, 1990.

30 State law does not define "material adverse effects" or "feasible and prudent alternatives," nor are there state rules governing such reviews.

31 The division's Compliance Data System has information on about 300 unpermitted sources that are not exempt from permit requirements and have been assigned priorities for future permitting.

32 Fourteen of the 64 A1 sources were included in the backlog of 250 permit applications reported to us by PCA staff.

33 The list of top emitters and the number with permits is from Minnesota Pollution Control Agency, *Air Toxics Source Review Guide*, March 1, 1990, Tables 1 and 2. We determined the number of emitters that have applied for permits from our survey of PCA permit staff.

permit staff are giving higher priority to air toxics sources that already have permits, rather than unpermitted sources.

The lack of a comprehensive permitting program has resulted in some inconsistent regulation. For example, at least 11 Minnesota sand and gravel companies have air quality permits, but PCA staff have delayed issuing permits to many others because they consider the sand and gravel permitting rules unclear. PCA also lacks a comprehensive permitting program for small boilers. PCA solicited permit applications from schools a few years ago and issued permits to at least 35 districts. However, there are many types of buildings with comparable boilers, such as large apartment complexes, that have not been contacted by PCA.

The division has not made adequate efforts to tell companies about the need for permits.

It is worth contrasting the lack of comprehensive permit coverage in air quality with the efforts made by PCA's Hazardous Waste Division to identify all of the state's hazardous waste generators (see Chapter 5).[34] In fact, Air Quality Division enforcement staff told us they would be reluctant to issue automatic penalties to companies without permits because the division has not made adequate efforts to communicate to companies the need for permits.

We think the lack of a comprehensive permitting program is unacceptable, and the problem seems to be more serious in the Air Quality Division than in other PCA divisions. We recommend that:

- **The Air Quality Division should periodically make comprehensive efforts to identify companies without permits. The division should develop "fact sheets" that explain regulations pertaining to various industries. Companies should be given a reasonable opportunity to provide PCA with the information needed to issue permits, but recalcitrant companies should be subject to enforcement action.**

As recommended earlier, PCA should ensure that problems with state rules do not inhibit comprehensive permitting, and, if appropriate, PCA should reconsider rules that require small emission sources to have permits.

Unless the Air Quality Division adds staff or makes better use of existing staff, the identification of previously unregulated air emission sources will add to PCA's already large permit application backlog. As noted earlier, we think PCA can improve the efficiency of its permitting processes, but the agency should also consider the need for staff reallocations or permit fee increases.

"Potential to Emit"

The Air Quality Division issues its permits based on an assessment of a source's "potential to emit," rather than actual emissions. Federal regulations define "potential to emit" as "the maximum capacity of a stationary source to

34 Air Quality Division staff noted that the Hazardous Waste Division has 10 staff who identify waste generators, in addition to its permit and enforcement staff. In contrast, the Air Quality Division relies solely on permit and enforcement staff to identify unregulated emission sources.

emit a pollutant under its physical and operational design," and state rules have a similar definition for sources not subject to federal regulations.[35] Thus, PCA staff calculate the emissions that would result from having the source operate 24 hours a day, 365 days a year. In general, stricter regulations apply to sources with a higher estimated potential to emit.

Permits are based on potential, rather than actual, emissions.

Obviously, the assumption of continuous, year-round operation does not reflect the actual use of many emission sources, such as boilers used to heat buildings. Thus, state and federal regulations allow permittees to reduce potential emissions by agreeing to "enforceable" permit limits on (1) hours of operation, or (2) type or amount of materials combusted, stored, or processed. PCA requires these limits to be written into permits. However, this creates a Catch-22 for unpermitted companies whose potential emissions exceed the threshold at which a permit is required (25 tons per year). Specifically, because enforceable permit conditions are the only way to reduce potential emissions below the threshold at which permits are required, all sources with potential emissions greater than 25 tons are forced to get state permits—even if their actual emissions are substantially lower.

In some cases that we discussed with PCA permit engineers, companies have relatively clean primary heating sources with a low potential to emit. However, the companies' seldom-used backup boilers burn dirtier fuels and increase the potential to emit above the permit threshold. If, indeed, the backup boilers are rarely used, we question whether the potential to emit concept serves a useful public purpose.

For facilities subject to federal regulations, the courts have ruled that permits must be based on the potential to emit, not actual emissions.[36] But for small facilities, particularly existing facilities with potential emissions between 25 and 50 tons, the state has some latitude on the threshold at which permits are required. We recommend that:

- **PCA should consider an alternative to permits for sources whose potential emissions exceed 25 tons, but whose actual emissions do not. This would likely take the form of (1) a brief agreement limiting operating hours or materials used, and (2) requirements that companies keep supporting documentation of compliance with the agreement.**

Indirect Source Permits

Minnesota rules require builders of new parking facilities for 2,000 or more cars to obtain indirect source permits prior to construction. The purpose of the permit is to limit vehicle emissions of carbon monoxide, often through traffic control or routing. Because developers cannot commence construction without this permit, the financial success of large projects depends partly on

35 *40 C.F.R.* 52.21 (b) (4), and *Minn. Rules* Ch. 7005.0100.

36 *United States v. Louisiana-Pacific Corporation*, 682 F. 2d 1122 (D.Colo. 1987).

timely permit issuance. We examined the 16 new indirect source permits that PCA issued in 1989 and the first half of 1990. We found that:

- **The median time to issue an indirect source permit was five months.**

Some of the private consultants that provide information to PCA for indirect source permits told us that the total time required to issue permits is less important than predictability in PCA's permit process. In some files we reviewed, PCA staff informed developers of expected dates for (1) permit issuance, and (2) completion of application reviews. We found that PCA usually missed these milestones by one or two weeks. However, in about half of the cases, files contained no indications that PCA provided developers with expected timelines for permit issuance or completion of application reviews.[37]

ENFORCEMENT

The permitting process is PCA's primary tool for determining what is commonly referred to as "initial compliance" with air quality regulations. Through permit conditions and compliance tests preceding permit issuance, PCA staff ensure that a company is *capable* of meeting air quality standards. However, pollution control equipment required by permits is not always operated properly, and companies often change production processes during the course of their five-year permit. Thus, it is equally important to monitor "continuing compliance" with standards.

To enforce air quality rules, PCA has many sources of information, including: (1) on-site PCA inspections, (2) continuous emissions monitoring reports, (3) performance tests (also called "stack tests"), and (4) self-reported emissions data. This section examines how PCA uses this information and enforces air pollution regulations.

Inspections

The Air Quality Division's enforcement staff conduct routine inspections, respond to citizen complaints, and occasionally support the efforts of PCA permit staff through observations of company operations. Virtually all air quality inspections are unannounced. Inspectors usually tour the facilities they visit, observing production processes and pollution control equipment. They determine whether the company has appropriate permits and properly-run emissions equipment. PCA inspectors do not directly measure the amount or content of pollutants emitted, although they sometimes: (1) measure the opacity of stack emissions through observation, or (2) read the operating gauges on pollution control equipment to ensure permit compliance.[38]

---

37 For the 16 permits, there were 32 possible milestones for dates of issuance or completion of application reviews. In 15 cases where PCA provided a milestone, 12 were not met. There were 17 cases where the files gave no indication that PCA provided the developer with these milestones.

38 Consultants to EPA have recommended that states conduct detailed engineering analyses on sources with histories of compliance problems, but PCA rarely conducts inspections of this depth.

The Clean Air Act and its implementing regulations do not address inspection frequency, but EPA has provided states with some guidance. For purposes of setting inspection priorities, EPA classifies companies according to their emissions levels. Figure 2.6 lists the three classifications, with "A1" sources being the largest emitters. Starting in 1980, EPA recommended a minimum of annual inspections for A1 sources and biennial inspections for A2 sources. Since 1985, EPA has tried to grant states some additional flexibility in their inspection schedules, provided states do not reduce the resources devoted to inspections.[39] Supplementing these guidelines, PCA's goal has been to inspect B sources at least every five years. To determine actual rates of inspection, we conducted an in-depth review of PCA's 1989 stationary source air quality inspections. We first looked at non-incinerator inspections and found that:

- **Air Quality Division staff conducted 331 on-site inspections in 1989, including at least 60 at companies without air quality permits.[40]**

Figure 2.6: Federal Categories of Air Emission Sources

Category	Definition
A1	Source has actual or potential criteria pollutant emissions exceeding 100 tons per year.
A2	Without pollution controls, source has potential emissions greater than 100 tons per year, but has controlled emissions of less than 100 tons per year.
B	Source has actual and potential emissions less than 100 tons per year.

Source: U.S. Environmental Protection Agency.

PCA is not meeting its inspection goals.

Table 2.6 shows how often PCA staff inspected sources of various sizes in 1989. At current rates of inspection, PCA visits A1 and A2 sources with permits once every two to three years, and B facilities once every 16 years. These inspection frequencies are less than the EPA and PCA goals cited above. EPA's Region V staff told us that it is difficult to compare inspection among states, but their impression is that Minnesota does fewer air quality inspections than other states in the region. Table 2.7 compares the number of inspections done by various states to meet their commitments to EPA. EPA's most recent audit of Minnesota's enforcement program concluded that:

39 For example, EPA allows less frequent inspections of companies that do not operate year-round. Also, EPA is starting to allow states to substitute reviews of companies' continuous emission monitoring reports for on-site inspections.

40 Sixty of the sources inspected in 1989 have never been issued a PCA air permit, as of mid-1990. There are likely other facilities that received initial permits between their 1989 inspections and our review of PCA's information systems.

Table 2.6: 1989 PCA Air Quality Inspections

Type of Source	Number of Permittees[a]	Total 1989 Inspections[b]	Number of Unique Companies With Permits That Were Inspected[c]
A1	297	166	120
A2	228	118	85
B	294	42	18
	819	326	223

Source: Air Quality Division Compliance Data System.

NOTE: Does not include 124 incinerator visits by incinerator inspection staff, many of which were not inspections.

[a]Totals do not include four companies for which we could not determine source type.
[b]Does not include five inspections for which the type of source was unknown.
[c]Because PCA inspected many sources more than once in 1989, this column shows the unduplicated number of sources inspected.

> In most cases, deficiencies identified in the audit can be traced to a shortage of field inspectors. For example, violating sources rarely receive sufficient follow-up inspections to verify either compliance or violation. Newly permitted sources do not seem to get inspected upon startup to verify compliance.... Emission points which are not operating at the time of inspection often go uninspected for several years because the inspections are few and far apart. Some seasonal sources, volatile organic compound sources, and sources not being inspected as part of the grant commitment are seldom inspected.[41]

One-fifth of Minnesota's largest emission sources have never been inspected.

The Air Quality Division's primary computer database maintains information on staff enforcement activities. Using this database, we determined the date of most recent inspection for each permitted source. We found that:

- **PCA's enforcement database contains no record of any inspections in any year at 21 percent of the state's 297 large (A1) sources, 29 percent of the 228 medium (A2) sources, and 58 percent of the 294 small (B) sources.**

We also examined the geographic distribution of PCA's air quality inspections. For stationary sources of air pollution, about half of the state's criteria pollutant emissions come from sources in the Twin Cities metropolitan area, and about half from the remainder of Minnesota. Table 2.8 shows the number of non-incinerator inspections occurring in each region of the state in 1989. We found that:

41 U.S. Environmental Protection Agency, "1988 National Air Audit System Assurance Report," (based on EPA's December 1988 review of PCA files). Two PCA enforcement staff have been added since this audit was conducted, but these staff oversee asbestos removal, not stationary emission sources. Although PCA does not conduct as many inspections as EPA would like to see, it fulfills most of its inspection commitments to EPA, which are negotiated as part of the annual federal grant process.

Minnesota sources receive fewer inspections than sources in several neighboring states.

Table 2.7: Number of State Inspections Done to Meet EPA Grant Commitments, 1988-89

State[a]	Sources Subject to Federal Regulation[b]	FY 1988 Inspections Completed	FY 1989 Inspections Completed	Percent of Sources Inspected In FY 1989
Minnesota	595	212	251	42.2%
Wisconsin	767	403	406	52.9
Illinois	3,253	1,241	1,341	41.2
Ohio	1,530	1,039	1,116	72.9
Indiana	1,240	818	860	69.4

Source: U.S. EPA Region V Office.

[a]EPA staff were unable to obtain inspection data for the other state in Region V, Michigan.
[b]Total number of A1 and A2 sources identified in EPA information systems.

- **PCA conducts more inspections in those parts of the state where its inspection staff are based.**

Most of PCA's inspectors work out of the agency's central office in St. Paul. These staff inspect facilities in the Twin Cities metropolitan area, and they also have near total responsibility for inspections in the western half of the state. Two regions (northeastern and southeastern Minnesota) have their own inspectors, resulting in higher inspection frequencies than other regions outside the Twin Cities area.

Table 2.8: Regional Distribution of Inspections, 1989

Region	Total Inspections[a]	Total Permitted Sources In Region[b]	Percent Inspected
Twin Cities Metropolitan Area	126	289	44%
Northeast Minnesota	79	96	82
North Central Minnesota	23	79	29
Northwest Minnesota	27	102	26
Southwest Minnesota	18	92	20
Southeast Minnesota	58	163	36
	331	821	40%

Source: Air Quality Division Compliance Data System.

[a]Does not include incinerator inspections. Totals shown are duplicated counts; some sources were inspected more than once. Sixty of these inspections were at sources without permits.
[b]We were unable to determine the location of two sources.

We also reviewed enforcement files to determine how often PCA inspected municipal solid waste incinerators during 1989. The staff who inspect incinerators are part of a unit that is separate from other enforcement staff. Of the 11 incinerators that operated throughout 1989, 10 received at least two inspections during the year. One incinerator was not inspected during 1989.[42]

Incinerators receive more frequent inspections.

We think PCA inspects emission sources too infrequently. PCA not only inspects too few sources with permits, but it is also unable to visit enough of the many sources without permits. We recommend that:

- **PCA should consider internal reallocations of staff, from within or outside the Air Quality Division, to increase the frequency of air quality inspections. PCA should give first priority to full-time or part-time staff additions in regions of the state without air quality inspection staff.**

Continuous Emissions Monitoring

"Continuous emissions monitoring" (CEM) equipment provides ongoing data on emissions from a source. According to state rules, the PCA commissioner may order any emission source to install CEM equipment "when in his judgment other methods of measurement or calculation do not provide adequate information on the level or variation of emissions to assure compliance with applicable regulations."[43] The number of pollutants that can be readily monitored with CEM equipment is limited. For example, emissions of particulates and air toxics cannot be directly monitored with CEM equipment.

Many large sources do not use continuous monitoring equipment.

About 50 of Minnesota's 800 permitted air emission sources in Minnesota have CEM equipment, primarily for opacity of stack emissions. About 20 sources (mostly power plants) continuously monitor sulfur dioxide, and a few monitor nitrogen oxides, carbon monoxide, and other emissions. According to EPA staff we talked with, Minnesota monitors a greater variety of pollutants with CEM equipment than other states in the region, but it monitors relatively fewer sources than some states. We reviewed lists of Minnesota's largest polluters and found that:

- **There are many large emission sources that do not have continuous emissions monitoring equipment.**

For example, although Minnesota's top nine emitters of sulfur dioxide have CEM equipment, Table 2.9 shows that many other large emission sources do not. Even fewer of Minnesota's top emitters of nitrogen oxides have CEM equipment. PCA staff have negotiated installation of CEM equipment on a

---

42 We looked at incinerators separate from other sources partly because of concerns about the validity of incinerator inspection data in the division's database. We found many cases where meetings to discuss stack tests, observations of stack tests, and other site visits are recorded as inspections in PCA's information system. Thus, we independently verified the number of municipal incinerator inspections through a review of PCA's enforcement files.

43 *Minn. Rules* Ch. 7005.1850, Subp. 1.

Table 2.9: Large Sulfur Dioxide Sources That Do Not Have Continuous Emission Monitors

Source	1986 Tons Emitted*
Otter Tail Power, Hoot Lake Plant	2,730
Eveleth Mines, Fairlane Plant	1,719
Farmstead Foods	1,707
Virginia Public Utilities	1,117
New Ulm Public Utilities	1,076
U.S. Steel (Minntac)	1,076
Duluth Steam Coop Association	995
Austin Utilities	965

Source: Program Evaluation Division interviews with PCA staff and PCA 1986 air emissions inventory.

*PCA 1986 emissions inventory.

Until 1990, PCA did not systematically examine the CEM data it collected.

case by case basis because there are no rules that specifically indicate which companies should have it.

PCA requires companies to analyze their own CEM data and submit quarterly reports of emissions that exceed standards. 1989 PCA records indicate that most companies submitted timely reports. None of the companies that failed to submit reports received notices of violation.[44] PCA staff rarely verify the validity of these reports by reviewing companies' raw CEM data.

- **Although many companies have had CEM equipment for years, PCA did not centrally collect and review CEM reports until 1990.**

Until 1990, there were no division guidelines for reviewing CEM reports, and EPA staff told us that enforcement varied considerably among the PCA staff receiving CEM reports. At EPA's urging, PCA is now developing a centralized CEM review system and enforcement policies.

To the extent that it is cost-effective, we think PCA should give high priority to increasing the use of continuous monitors by large Minnesota sources. For certain pollutants, these monitors provide extensive data and may reduce the need for staff-intensive inspections. However, this equipment is also expensive to purchase and install—usually at least $150,000. This private cost must be weighed against the benefits of better information for enforcement purposes. We recommend:

- **PCA should develop rules specifying which companies will be required to install CEM equipment. PCA should consider various factors, including the risks posed by various pollutants and the cost of CEM equipment.**

44 The division's Compliance Data System indicates that about seven percent of required 1989 reports were not submitted. Some reports that PCA records indicate were submitted were not in the enforcement files at the time of our review.

To improve quality control of CEM data, PCA should investigate the feasibility of having companies transfer raw computer data directly to PCA. This would improve PCA's quality control over emissions data and reduce paperwork for companies with CEM equipment.

Stack Tests

Stack tests provide a snapshot of actual facility emissions.

As noted earlier, air quality inspections are quite limited in scope. Inspectors can determine whether pollution control equipment is operating and can observe visible emissions, but inspectors do not measure the volume or content of emissions. To more fully assess emissions and compliance with regulations—typically at the time of permit issuance and reissuance—PCA asks many companies to conduct stack tests. These tests provide a snapshot of actual emissions when a source operates at the maximum capacity authorized by a permit. State rules require companies to do tests at the request of the PCA board or commissioner but do not specify the frequency of these tests.[45]

We wanted to find out how often stack tests are done at large facilities, so we reviewed data from the Air Quality Division's information system. We found that:

- **During the period from January 1987 to mid-1990, less than one-third of large (A1) sources with permits conducted stack tests.**[46]

Given that stack tests provide more comprehensive data on emissions than do inspections, we were surprised at the relatively small number of tests done. Division managers told us that they have not requested more stack tests because they do not have enough staff to ensure prompt reviews of test results.

We also heard concerns from some PCA staff and air quality consultants about the reliability of stack tests. First, stack tests may not be be representative of normal operating conditions. Companies often plan for stack tests in advance and specially tune or maintain equipment for the occasion. Second, PCA has limited control over test quality. PCA staff always have "pre-test meetings" with companies to discuss testing methods, and staff witness about 25 percent of the tests done.[47] However, consulting firms do the analysis of air quality test samples, and there is no state certification program for these laboratories as there is for laboratories that test water quality. Third, EPA staff told us that it is not unusual for consultants to start stack tests but terminate them if it becomes apparent that the tests will indicate air quality violations. Such practices raise questions about the validity of stack testing.

---

45 *Minn. Rules* Ch. 7005.1860, Subp. 1.

46 We determined that 106 A1 sources had stack tests during this period, often more than one. Of these sources, 14 have never had permits (as of mid-1990). There are about 300 permitted A1 sources in Minnesota.

47 According to PCA records, companies conducted 191 tests in 1989, and PCA staff witnessed 50.

State rules authorize PCA or its agent to enter emission facilities for the purpose of conducting stack tests.[48] PCA used to have its own staff conduct such tests, but has not done independent stack tests for several years.

Because stack tests can be very expensive, requiring additional tests should be carefully weighed against the compliance monitoring benefits.[49] Some PCA staff we talked to believe that additional CEM monitors would improve compliance monitoring more than additional stack tests, while others felt that stack tests are the best way to measure compliance for certain pollutants (such as air toxics). We recommend that:

- **PCA should determine which, if any, facilities could best be monitored by more frequent stack tests and impose these testing requirements through rules.**

- **The Legislature should authorize a certification program for air quality laboratories. To address concerns about the validity and independence of stack tests done by company-hired consultants, PCA should investigate the possibility of retaining a consulting firm to conduct occasional tests. These tests would be paid for by permittees as a condition of the permit.**[50]

If PCA managers believe that additional staff will be needed to review stack tests, they should request legislative approval for changes in facility fees.

Emissions Inventory

PCA collects biennial emissions inventories despite federal rules requiring annual submissions.

While a small portion of companies have CEM equipment for self-monitoring, a much larger group must submit information for a statewide "emissions inventory." Federal rules require states to submit annual reports of emissions for each of the largest emission sources.[51] Minnesota rules require each facility that emits more than 25 tons per year of particulates, sulfur oxides, nitrogen oxides, carbon monoxide, or hydrocarbons to submit an annual emissions inventory.[52] Typically, companies send PCA information on materials used in their production processes, and PCA applies federal "emission factors" to determine estimates of actual emissions. We found that:

- **Contrary to state and federal rules requiring annual emissions inventories, PCA collects emissions data from sources every two years.**

PCA meets the federal requirement for an "annual report" only by submitting half of its collected data one year and half the next. PCA management said that staffing constraints have prevented more frequent inventories and ac-

48 *Minn. Rules* Ch. 7005.1860, Subp. 8.

49 Air quality consultants told us that the cost of a stack test for a typical facility ranges from $2,500 to $25,000.

50 PCA proposed increasing fees for this purpose in 1988 but the Legislature did not approve the request.

51 *40 CFR* 51.321 to 51.323.

52 *Minn. Rules* Ch. 7005.1870, Subp. 4.

knowledged that Minnesota is one of only a few states without an annual inventory. The Air Quality Division's collection of emission data on a biennial basis is in sharp contrast to the Water Quality Division's requirement for monthly (and sometimes daily) reports on water discharges.

The division has not made enough use of emissions inventories.

The Air Quality Division has made little use of the emissions inventory as an enforcement tool, except to monitor certain emissions that contribute to acid rain. According to PCA staff, no notices of violation have been issued based on information submitted for the inventory. Enforcement staff occasionally review the emissions inventory prior to inspections, but PCA staff have not systematically used the inventory to detect possible emission violations. Although it is likely that data from inspections, CEM reports, and stack tests provide a more solid basis for enforcement actions, PCA probably could develop a computer program to efficiently screen the inventory for possible violations. We recommend that:

- **By 1992, PCA should conduct a pilot study of the emissions inventory's potential as an enforcement tool.**

If the results show strong potential, PCA should consider the need for an annual, rather than biennial, inventory. A possible source of funding for additional staff is the emission-based fee mandated by the 1990 Clean Air Act amendments, discussed later in this chapter.

The data in Minnesota's emissions inventory has not been very current. During 1990, the most recent data available in PCA's computerized emissions inventory was for 1986. The 1988 data was not fully computerized until January 1991 because of extensive quality control reviews conducted by PCA staff. While quality control is a necessary part of any data system, a two-year delay in data entry makes the information less useful. PCA staff contend that the lack of timely data is one reason the emissions inventory has not been used for enforcement purposes.

Enforcement Actions

PCA has several options when it finds violations of environmental standards. Typically, PCA begins the enforcement process by notifying the violator and suggesting ways to correct the problem. If companies fail to respond, or if the violations are especially serious, PCA may try to negotiate a stipulation agreement (usually with monetary penalties), obtain a consent decree, or ask the Attorney General's office to pursue litigation.[53] When sources violate federal regulations, EPA often becomes involved if the violator does not return to compliance within 120 days of the inspection. EPA's involvement may be informal (such as getting PCA updates on the status of the violation) or formal (such as issuing a notice of violation or referring cases to the Department of Justice). Table 2.10 shows the number of enforcement actions and penalties levied by the Air Quality Division in recent years. EPA staff we talked to think that PCA has improved its enforcement efforts in recent years.

53 Consent decrees are like stipulation agreements but are administered by courts rather than PCA.

Table 2.10: Summary of Air Quality Enforcement Actions, Penalties Assessed, 1987-90

The number of enforcement actions and size of penalties has increased.

	1987	1988	1989	1990
Notices of violation (NOV)[a]	63	88	74	118
Stipulation agreements	6	11	15	22
Civil penalties assessed	$175,355	$433,600	$1,782,000[b]	$1,179,798[c]

[a]NOVs and stipulation agreements are shown for calendar years; civil penalties are shown for federal fiscal years (October to September).
[b]Includes a $1.5 million penalty issued jointly with the Hazardous Waste Division. Because most of the violations were air quality violations, we have included the penalty here.
[c]In addition, as part of settlements for enforcement actions, PCA received about $500,000 to begin operation of an air quality monitoring network in Dakota County.

We focused our attention on violations by stationary pollution sources, which account for most of the Air Quality Division's enforcement activities.[54] Table 2.11 contains a summary of these notices of violation (NOVs) for 1989. We found that:

- **Most of the NOVs issued to stationary pollution sources in 1989 were for operating without a proper permit, excess opacity of stack emissions, and "fugitive dust." In contrast, PCA issued relatively few NOVs for excess criteria pollutant emissions and, due to the lack of state or federal air toxics rules, none for toxic emissions.**

Table 2.11: Types of Air Quality Notices of Violation Issued to Stationary Sources in 1989

Violation	Number of Violations
Construction without permit, permit modification, or proper PCA notification	20
Opacity violation observed by PCA staff	10
Fugitive dust, fugitive emissions	10
Emission violation indicated by stack test	8
Violation of ambient air quality standards	2
Stack test indicates that permit modification is required	2
Emission violation indicated by continuous emissions monitor	2
Other*	6

*There were administrative violations (such as failure to keep or report records) in 11 NOVs, but these did not appear to be the primary violations. There was one NOV for each of the following: failure to install CEM equipment; indirect source permit violation; odor; failure to arrange stack test meeting with PCA; noise; inadequate plant operations. Because some of the 55 NOVs issued to stationary sources had multiple violations, the total adds to more than 55.

54 In addition to stationary source enforcement, PCA also issues 20 to 30 notices of violation each year for open burning, tampering with vehicle emissions equipment, and improper asbestos removal.

Opacity and fugitive dust emissions are important, but they often do not pose the serious health risks posed by other emission violations. Violation of the state's opacity rules indicates that emissions are smoky, typically measured through 5 to 30 minute opacity observations by inspectors. However, smoky emissions do not necessarily indicate that criteria pollutant standards have been violated, nor that human health is endangered.[55] "Fugitive dust" is particulate matter generated by industrial processes. If airborne, it can result in respiratory irritation for facility workers or neighbors.[56]

It is difficult to know conclusively whether the lack of NOVs for criteria emissions reflects compliance on the part of Minnesota companies or inadequate compliance monitoring on the part of PCA. As discussed earlier, many emission limits in state rules are lenient and outdated, thus increasing the likelihood of compliance by sources. However, our earlier findings about the relative infrequency of inspections, CEM reviews, and stack tests suggests that compliance monitoring is lax. Our recommendations for additional CEM reports and stack tests should help refocus PCA's efforts on problems other than opacity and fugitive dust that pose significant health risks.

We reviewed the geographic distribution of PCA's 1989 NOVs and found that:

- **About 40 percent of notices of violation issued in 1989 were to companies in the northeastern part of Minnesota.**

Companies in northeastern Minnesota seem to get closer scrutiny than companies elsewhere in the state.

Although the Twin Cities area has far more emission sources than northeastern Minnesota, companies in the Duluth region received more NOVs. Earlier, we noted that companies in northeastern Minnesota receive more frequent inspections than those in other regions, and PCA's northeastern Minnesota inspector told us that he attributes the high number of NOVs to inspection frequency. This inspector does about 70 on-site inspections per year, compared to 30 to 40 for most central office staff.[57] Division managers should consider whether there are ways to narrow this difference.

To improve our understanding of Air Quality Division enforcement actions, we reviewed PCA enforcement files for a random sample of 23 companies with 1989 NOVs. We tried to examine the time it took for violating companies to return to compliance, but we encountered several difficulties. Unlike PCA's Hazardous Waste Division, the Air Quality Division often does not send letters to companies indicating that violations have been resolved satisfactorily. Furthermore, in some cases, companies met the "process" requirements of NOVs (such as submitting plans for controlling fugitive dust), but PCA did not conduct immediate followup inspections to verify that problems were resolved. And in two cases we reviewed, regional office documents con-

55 PCA staff told us that opacity can be a surrogate for air toxics in some cases.

56 Minnesota's vague fugitive dust rule states that "no person shall cause or permit the handling, use, transporting, or storage of any material in a manner which may allow avoidable amounts of particulate matter to become airborne." (*Minn. Rules* Ch. 7005.0550, Subp. 1).

57 Besides inspections, central office staff also spend considerable time negotiating and administering enforcement agreements, preparing information for the PCA Board and legislators, and responding to complaints regarding companies throughout the state.

firming compliance apparently were not sent to PCA's central office files. We found that:

- **The time required to return violating companies to compliance varies considerably.**

Some violators return to compliance within weeks of receiving a NOV. For example, staff discovered a company that had been operating for 18 years without a permit, thus avoiding federal pollution control regulation. PCA issued a NOV, which was followed three weeks later by a stipulation agreement with a $50,000 fine. Three days after the PCA Board approved the stipulation agreement, the company paid the fine. PCA issued the permit less than three months after the NOV.

There is wide variation in the time required to return companies to compliance.

However, in about half of the 23 cases we examined, the process of returning sources to compliance took at least eight months following issuance of the NOV. In some cases, the delays were beyond PCA's control. For example, we reviewed two cases in which the violators were awaiting EPA actions more than a year after PCA issued the NOVs. In several other cases, lengthy periods of noncompliance occurred as companies waited for equipment, prepared for stack tests, postponed tests, failed tests, or waited for PCA staff to review tests. More often than not, the files indicated that PCA staff gave sources second chances (and sometimes several more) to meet earlier commitments or PCA deadlines.

Delays might also be attributed to the Air Quality Division's limited enforcement tools. The division has made increased use of stipulated penalties in recent years, but negotiating these penalties requires considerable staff time. Short of stipulated penalties, the Division's main option is issuing NOVs. We found that:

- **The notice of violation is a relatively weak enforcement tool.**

In several cases, we noted multiple NOVs or enforcement letters being sent to the same company, sometimes with little apparent effect. For example:

- In 1988 and 1989, a company received NOVs for stack test violations of carbon monoxide, odor, and particulate standards. PCA staff have subsequently sent the company "enforcement letters" for related problems. The company has failed to prove full compliance over the course of three years, but there have been no monetary penalties.[58]

- In 1986, PCA issued a NOV to a school district when tests showed a boiler in violation of particulate emission standards. The district failed subsequent tests in 1987 and 1989, and PCA issued another NOV in 1989. PCA sent a draft stipulation agreement to the district in late 1989 but the district has not agreed to the conditions.

58 The company has demonstrated compliance for carbon monoxide.

We think PCA could improve the efficiency of its enforcement process if granted administrative penalty authority by the Legislature. The experience of PCA's Hazardous Waste Division (discussed in Chapter 5) suggests that administrative penalties can be used prudently, but careful consideration should be given to the circumstances in which they are appropriate. We recommend that:

- **The Legislature should grant the Air Quality Division administrative penalty authority after the commissioner outlines the potential uses of this authority.**

Finally, we looked at consistency of enforcement and found some room for improvement. The most apparent problem is that:

- **The division enforces state opacity rules inconsistently.**

State opacity rules are inconsistently enforced.

State rules prohibit new facilities' emissions from exceeding 20 percent opacity, and existing facilities can have opacity between 20 and 40 percent for up to four minutes an hour. The rules do not indicate any circumstances in which emissions above these limits are excusable. Our review of PCA files indicated that staff often based enforcement actions on several-minute observations of excess opacity during inspections. In contrast, for companies that submit continuous emissions monitoring reports, PCA's general policy is not to issue violations unless sources exceed opacity standards more than five percent of the time over a three-month period. During our review of 1989 CEM reports, we saw numerous technical violations of opacity rules that did not result in enforcement actions.[59] Although we noted earlier that opacity receives relatively more scrutiny by enforcement staff than it merits, we think PCA's opacity reviews should be consistent.

We saw several other examples of inconsistent or inappropriate enforcement. For example, we saw one case in which PCA asked a company to correct opacity problems even though the documented opacity was in compliance with state rules.[60] In another case, a company received a NOV for operating without a permit, although PCA permit staff told us that state rules exempt the company from permitting.[61] Another company received a NOV for failure to schedule a meeting with PCA prior to a stack test. A subsequent inspection found that the company had failed to report combustion parameter exceedances to PCA, "a serious violation of the permit." However, PCA did not issue a NOV for this and other problems noted in the inspection.

We think the Air Quality Division's enforcement would be more consistent if it developed clear policies and procedures for enforcement actions. We recommend:

---

59 For example, we reviewed the CEM reports of two companies that reported hundreds of hours of CEM violations during 1989, but PCA issued no notices of violation.

60 The NOV itself did not cite an opacity violation, but the NOV cover letter did and required corrections.

61 PCA determined the company's exemption from permit requirements based on information the company submitted following the NOV.

- **The division should develop a policy and procedures manual for enforcement. The manual should clarify what constitutes a violation, circumstances in which companies might be excused from strict rule interpretations, and the type of enforcement actions justified by various violations. Also, the manual should articulate a consistent policy for enforcement of opacity violations.**

OTHER ISSUES

Fees

Since 1986, PCA has charged permit fees to emission sources. These fees pay for 6 of PCA's 12 permit engineers, as well as 4 other staff. A 1987 study reported that Minnesota was one of about 30 states that charged air permit fees.[62] During 1990, permittees paid fees for permit application ($50) and processing ($50 to $1,000, depending on the type of permit action). There are "processing fee surcharges" based on the tons of potential criteria pollutant emissions; the surcharges range from $175 to $2,500. "Additional processing fees" apply to companies subject to federal regulations and those requiring air quality modeling or test reviews. In addition, permittees pay annual fees ($225 to $450) and an annual surcharge based on tons of potential emissions ($450 to $2,280).

Some permittees expressed concerns to us about recent growth in PCA permit fees. To determine if these concerns were widespread, we inquired about air permit fees in our survey of permittees. We found that:

- **About 56 percent of permittees told us that current fees are at appropriate levels, while 39 percent said they are too high.**

Despite the imposition of fees to recover the costs of issuing permits, PCA has developed a large backlog of permit applications. Many companies wait lengthy periods to get new or renewed permits. Recently, the Koch Refining Company provided PCA with a $300,000 "gift" to expedite the permit process. The gift enabled PCA to hire a consulting firm to assist with the permit. In Chapter 1, we noted that such gifts give the appearance of special treatment and could bias PCA's regulatory stance.

Air permit fees do not cover the cost of issuing permits.

A more appropriate solution to the permit backlog might be a review of the entire permit fee structure. PCA's air quality permit fees do not cover the cost of issuing permits, and managers have been reluctant to propose fee increases because of possible criticism from business interests. PCA managers told us that the cost of issuing permits to large companies usually exceeds the permit fees charged. As a case study, we examined recent permit fees and costs for Koch Refinery. PCA permit staff estimated that they spent a mini-

62 State and Territorial Air Pollution Program Administrators, *Air Permit and Emissions Fees: Results of a Survey* (Washington, D.C., April 1987). We found that the fees collected by PCA increased from $137,000 in 1986 to $566,000 in 1990.

mum of 3,000 hours working on Koch permits during each of the past two years (1988 and 1989). Thus, staff costs for the Koch permits were at least $75,000 to $100,000 per year. In contrast, fees paid by Koch during these years averaged $25,000 per year.[63]

The new federal Clean Air Act amendments will require all states to implement new fee structures in the near future. The act requires states to charge fees of at least $25 per ton of emissions (or states may apply to EPA for lower fees if the revenues will pay for program costs). The fees will probably not create pollution disincentives for the state's largest polluters and toxic polluters because (1) they apply only to the first 4,000 tons of pollutants emitted by each company, and (2) toxic pollutants are typically emitted in relatively small quantities compared to criteria pollutants. To create stronger pollution disincentives and better reflect the cost of issuing permits, PCA may wish to consider fees for all quantities of emissions, or relatively higher fees for toxic emissions.[64]

The Clean Air Act amendments require that all fees collected must be spent to support the state agency's air pollution program. According to PCA estimates, a $25 per ton charge for Minnesota companies with potential emissions exceeding 100 tons per year would yield $5.7 million.[65] By comparison, the Air Quality Division's total fee revenues in Fiscal Year 1990 were about $566,000. Thus:

New federal requirements will likely increase fees dramatically.

- **Unless the state applies for an exemption from EPA, the fees mandated by the new federal Clean Air Act amendments will result in 10 times more fee revenue for the Air Quality Division.**

Under the amendments, the state "program costs" that must be covered by the new fees include the costs of issuing and enforcing permits, air quality monitoring, and development of regulations. In other words, the fees are intended to cover virtually all major activities conducted by state air quality agencies. Although the Clean Air Act amendments mandate states to implement these fees, it is unclear whether the broad uses of fees envisioned in the amendments are consistent with Minnesota law. As discussed more fully in Chapter 6, Minnesota's general fee-setting statutes require the Legislature to ensure that fees pay only for costs "that provide a primary benefit to the individual fee payer."[66] Many of the Air Quality Division's programs provide more general public benefits. PCA staff told us they intend to ask the Legislature for statutory revisions that will enable collection of the fees authorized by the Clean Air Act amendments.

---

63 The division does not routinely allocate staff time to individual permits, so there is no easy way to compare staff costs to fees paid.

64 For example, Wisconsin charges emission fees based partly on the toxicity of pollutants. The fee per daily pound of emissions ranges from 50 cents to more than $1,000.

65 This assumes that fees will only apply to the first 4,000 tons of criteria pollutants emitted by each company.

66 *Minn. Stat.* §16A.128, Subd. 1.

Air Toxics Regulation

The 1990 Clean Air Act amendments require EPA to develop federal standards for toxic air polluters. During the past decade, EPA initiated little air toxics regulation, leaving most responsibility to the states. About half of the states have air toxics rules, and at least 16 states have enacted their rules since 1985.[67] In 1985, PCA started including air toxics conditions in some of the permits it issued, primarily requiring emission studies. However, Minnesota has no air toxics rules, so staff have negotiated permit conditions on a case by case basis. In 1990, PCA developed air toxics guidelines to provide the regulated community with a better sense of its regulatory approach, and PCA intends to promulgate air toxics rules in 1992.[68]

It has taken PCA longer than necessary to develop air toxics rules. The Air Quality Division established an advisory committee in 1988 to help develop rules, but PCA did not clearly define the committee's mission. Because of the lack of progress toward new rules, PCA reformulated the committee in 1990 and brought in a facilitator to run the meetings. PCA now has an ambitious schedule for development of rules for nearly 200 air toxics, and the rule making process seems to be reinvigorated. Presently, PCA staff favor technology-based requirements, rather than setting emission or ambient limits for toxic pollutants. A primary advantage of requiring that companies install the best available toxic reduction technology is that lengthy debates about health risks for a multitude of pollutants might be avoided.

An unresolved issue is how PCA can ensure continuing compliance with toxics rules. Presently, PCA does little ongoing toxics monitoring for enforcement purposes. It is difficult to monitor actual air toxics emissions during inspections or with CEM equipment, and the new state rules may not include emission standards. It would be prudent for staff to begin developing strategies now for adequate enforcement of the new federal and state toxics regulations.[69]

SUMMARY

Although state regulation of air pollution predates many other environmental programs, the federal and state emphasis on air quality regulation leveled off in the past decade. Today, PCA's Air Quality Division lacks comprehensive rules, a comprehensive, efficient permitting system, and adequate information

---

67 State and Territorial Air Pollution Program Administrators and the Association of Local Air Pollution Officials, *Toxic Air Pollutants: State and Local Regulatory Strategies: 1989* (Washington, D.C., September 1989), p. A-7 to A-9.

68 Some people have questioned why PCA is writing air toxics rules at the same time EPA is doing so under the new Clean Air Act amendments. EPA will require toxic emitters to install certain types of pollution control technology, and will enact later toxics restrictions based on health risk assessments. PCA staff told us they are proceeding with Minnesota's rules because (1) EPA's risk assessments will not be done for several years, (2) EPA's rules will consider health risks but not environmental risks, and (3) the public is demanding stricter toxics regulation.

69 PCA staff told us that their focus on criteria pollutant monitoring has been driven largely by EPA requirements.

to effectively enforce regulations. The division has emphasized "initial compliance" (through permitting), but there has been too little emphasis on "continuing compliance" (through enforcement). For the most part, regulated facilities respect the technical competence of PCA's staff, but they want PCA's regulatory approach to be more timely, predictable, and flexible. Our primary recommendations are that:

- **The Air Quality Division should collect and review more information on pollution sources' continuing compliance with air quality regulations.**

- **The division should take the internal steps necessary to achieve a comprehensive, efficient permitting system, and report to the 1992 Legislature on its progress. If the division needs additional permit staff, PCA should consider internal staff reallocations or permit fee increases.**

- **The Legislature should grant the division administrative penalty authority to improve the efficiency and effectiveness of enforcement.**

- **The division should update Minnesota's air quality rules.**

- **The division should communicate more effectively with regulated facilities, particularly by communicating the need for permits and providing clearer instructions for permit applications.**

- **The division should develop a computerized permit tracking system.**

- **The Legislature should review the staffing needs of the division's vehicle inspection program.**

WATER QUALITY DIVISION

Chapter 3

Many state and local agencies share responsibility for protecting Minnesota's surface and ground water resources. PCA's Water Quality Division is responsible for:

- developing water quality standards and rules;
- issuing permits for wastewater discharges to surface water or land;
- ensuring continuing compliance with permit conditions;
- monitoring surface water quality;
- administering a grant and loan program for municipal wastewater treatment plant construction; and
- implementing and coordinating strategies to reduce nonpoint source pollution.

In this chapter we examine the division's performance in fulfilling its permitting and enforcement responsibilities under state and federal law. We focused our review on so called *point* sources of pollution, such as municipal wastewater treatment plants and industrial facilities. We excluded the division's programs to remedy *nonpoint* source pollution, such as agricultural and urban runoff, because they are new programs and sufficient information to evaluate their effectiveness is not available. We also excluded the municipal construction grants program from the scope of our review.[1] Specifically, we asked:

- **How efficiently and effectively does the division carry out its permitting and enforcement responsibilities?**
- **What is the degree of compliance with water quality permits?**
- **Does the division take timely and consistent enforcement action when permit conditions are violated?**

---

1 This program was scheduled to be reviewed by the Legislative Commission on Water.

In order to address these questions we reviewed a stratified random sample of 120 permit files, reviewed the computerized records of the division, and interviewed permittees, EPA, and state officials.

In general, we found that PCA has made continual progress in bringing point source dischargers into compliance with federal and state requirements. Compliance of major dischargers with standards is relatively good and many minor municipal dischargers have been brought into compliance with the help of federal and state construction grants. However, we found that compliance among smaller, so called "minor" facilities, was spotty. PCA has lacked the staff and the enforcement tools to effectively deal with all instances of noncompliance. Nonetheless, we believe there are steps PCA can take with existing staff to more effectively and efficiently address permitting and compliance issues.

REGULATORY FRAMEWORK

Minnesota operates the majority of its water pollution control programs under delegation agreements with the U.S. Environmental Protection Agency (EPA). Minnesota negotiates an annual program plan with EPA and receives EPA grants that fund about 32 percent of the program.

Federal regulation of water pollution began with the Rivers and Harbors Act of 1899. However, this act, administered by the U.S. Corps of Engineers to aid navigation, had little impact on most municipal and industrial sources of pollution.[2] Minnesota began governmental efforts to curb water pollution as early as 1927, when a legislative committee reported on the pollution in the Mississippi River south of the Twin Cities Metropolitan Area and the need for sewage treatment plants.[3] The Department of Health took the lead in water pollution control from then until PCA's creation in 1967.

The federal Water Pollution Control Act of 1948 provided the first modern attempt to deal with water pollution. This act authorized the federal government to engage in research about water pollution. The 1956 amendments to the act authorized a federal program of construction grants (with a federal share of between 30 and 55 percent) for municipal wastewater treatment plants. The 1956 amendments also authorized states to establish standards for water quality and authorized a limited federal role in enforcement actions.

The federal Water Quality Act of 1965 required states to establish standards for ambient water quality on interstate water bodies and to develop implementation plans to meet the standards. States had primary responsibility for enforcement action, but the federal government reviewed and approved standards and implementation plans. States were to determine the standards

2 Much of the next section is derived from A. Myrick Freeman III, "Water Pollution Policy", in *Public Policies for Environmental Protection,* ed. Paul R. Portney, (Washington, D.C.: Resources for the Future, 1990) 97-151.

3 *The Pollution of the Boundary Waters Between Minnesota and Wisconsin*, Report of the Interim Committee, Minnesota House of Representatives (1929).

and then divide the total allowable discharges necessary to meet the standards among the major dischargers.

The Federal Water Pollution Control Act of 1972 represented a major change in the regulatory approach to water pollution. Congress established the goals of eliminating all discharges of pollutants by 1985 and the attainment of "fishable and swimmable" waters by July 1, 1983. EPA established a set of technology-based effluent standards to meet these goals. The act required EPA to establish effluent standards for all dischargers within various categories instead of making case by case determinations based on the quality of the receiving waters. Initially, EPA, rather than the states, issued all permits. States could receive a delegation of authority to issue permits when they met certain conditions. EPA delegated this authority to Minnesota in 1974. As of 1988, there were 39 states in which EPA had delegated its authority.

The 1972 federal act retained the state standard setting process established in 1965 and required that states review these standards every three years. Minnesota has set these standards through the administrative rule making process and in July 1990 adopted its most recent update.[4]

The 1972 act called for standards to be implemented in two stages. By 1977, industries were to be meeting effluent limitations based on the best practicable control technology available. EPA was to consider the cost of the technology in relation to the benefit of the effluent limitation in determining what was practicable. Effluent limits for publicly owned treatment works were to meet secondary treatment standards by 1977. These deadlines for publicly owned treatment works were extended by 1977 amendments until 1983, and were further extended in 1981 until July 1, 1988.

By 1983, industrial effluent limits were to meet standards based on the best available technology economically achievable, and municipal discharge limits were to be based on the best practicable waste treatment technology. If these standards would not result in water quality goals being met, higher standards could be required.

The Clean Water Act of 1977 modified some of the deadlines for achieving effluent limits. After 1977, standards for conventional pollutants (suspended solids, bacteria, organic material, and pH) were to be established based on "best conventional pollution control technology" and were to be achieved by July 1, 1984. Toxic pollutant dischargers were to meet best available technology effluent limits either by 1984, or three years after the promulgation of the standards. The 1987 reauthorization of the Clean Water Act again extended the deadlines until 1989.

The 1987 amendments also required all states to adopt numerical standards for all "priority pollutants" for which EPA has established criteria.[5] This list, required by Section 307 (a) of the Clean Water Act, currently contains 126 toxic pollutants and EPA has adopted criteria for 30. Minnesota has recently

4 *Minn. Rules* Ch. 7050.

5 33 U.S.C. Section 1313 (c)(2)(B).

amended its water quality rules to establish these numerical standards for 53 toxic substances (48 of which are priority pollutants), as well as a procedure that can be used to establish standards for additional pollutants. Portions of the new rule have been controversial and are currently being challenged in a legal action brought by the Minnesota Chamber of Commerce.

A frequent complaint of permittees that we spoke with was that PCA dictated the technology to be employed to meet the water quality standards. PCA managers respond that in large part federal requirements dictate the approach to be taken and that the agency has an obligation to prevent technologies that do not work from being employed again.

Construction Grants Program

Unlike industrial facilities, municipal wastewater treatment plants have been eligible to receive construction subsidies since 1956. Congress raised the federal share of treatment plant construction grants from a maximum of 55 percent to 75 percent in 1972 and decreased the federal share back to 55 percent in 1984. Since 1970, Minnesota has supplemented the federal contribution through a state grants program. During the early 1980's the state and federal grants combined could, in some instances, pay 94 percent of the cost of design and construction of new municipal waste treatment facilities.

Since 1972 over $1 billion in state and federal funds have been spent on new or modified wastewater treatment facilities. However, the Clean Water Act amendments of 1987 provided for phasing out the federal grant programs. The last year of funding for the grant program was federal fiscal year 1990 (ending September 30, 1990).

The federal construction grant program is phasing out.

The federal grant program is being replaced by a state loan program. Through 1994 the federal government will continue to capitalize state revolving loan programs for support of construction, although the amount of support will decrease each year. The Public Facilities Authority in the Minnesota Department of Trade and Economic Development administers the loan fund. Until 1994, up to four percent of the federal grant for state revolving funds can be used for administrative purposes. After 1994, the costs of administering the program will have to be borne by the state. PCA currently funds approximately 10 positions in its municipal program from these federal administrative dollars. PCA funds an additional 20 positions from previously earned federal grant program administrative funds. These positions administer the remaining federal grants for which construction is not yet complete. These positions will be eliminated in a phased fashion as construction is completed (approximately one-third in each of the next three years).

PCA's major emphasis during the 1980s has been implementing EPA's National Municipal Policy. This policy, promulgated in 1984, was designed to bring all municipal facilities into compliance with their final effluent limits by July 1, 1988. PCA required all communities that needed capital construction to meet their final permit limits to submit municipal compliance plans detailing the needed improvements, how they would be funded, and a schedule for

completion. PCA initially identified 135 communities that needed financial help to meet their permit limits. Beginning in 1987, facilities that would not complete construction before the July 1, 1988 deadline were required to enter into court ordered schedules of completion. The Attorney General and division staff have negotiated 62 such consent decrees establishing court ordered schedules. According to PCA, since 1984 over 80 percent of Minnesota facilities on the national municipal list have either returned to compliance or have signed fixed date schedules to do so.[6] Twenty-seven small communities remain on the list waiting for funding to complete their treatment plant upgrades. It is likely that some communities will not be able to afford to complete the needed facilities and consequently will not meet the federal standards.

Progress has been made in municipal facility compliance.

In summary, the Minnesota Pollution Control Agency operates its major water quality programs under delegation agreements with EPA. Federal statutes and regulations that require technology-based effluent limits and standards direct Minnesota's approach to water pollution regulation. During the 1980s, EPA and PCA policies have emphasized municipal sources of pollution because there was federal money available to construct new facilities and to pay for staffing. EPA's current emphasis is on nonpoint source pollution and toxic sources of pollution.

ORGANIZATION AND STAFFING

The Water Quality Division reorganized during the last six months of 1990. The division previously was organized into three sections: Regulatory Compliance, Program Development, and Municipal Wastewater Treatment. As shown in Figure 3.1 the new organizational structure consists of four sections: Assessment and Planning, Nonpoint Source, Industrial, and Municipal.

The division recently reorganized to better meet its goals.

Division management cite a number of reasons for the reorganization. First, the phaseout of the construction grant program at the federal level means that the design and construction of municipal wastewater treatment facilities will make up a much smaller proportion of the divison's workload in future years. Second, the federal government has begun to award funding for states to deal with nonpoint source pollution, and state efforts such as the Clean Water Partnership mean that increased emphasis will be placed on remaining nonpoint pollution problems. Third, the division's role as a partner in water planning with local units of government is becoming more important, and division managers feel that the new structure will clarify relations with external stakeholders. Fourth, the new organizational structure will allow the municipal section to organize their activities on a regional basis, and will allow the industrial section to more easily focus on cooperative efforts with other divisions.

Figure 3.2 shows the number of personnel in the division by the type of job activity. As we discussed in Chapter 1, water quality is a more established pro-

6 Some schedules were established in permits rather than through signed agreements.

Figure 3.1: Organization Chart, Water Quality Division

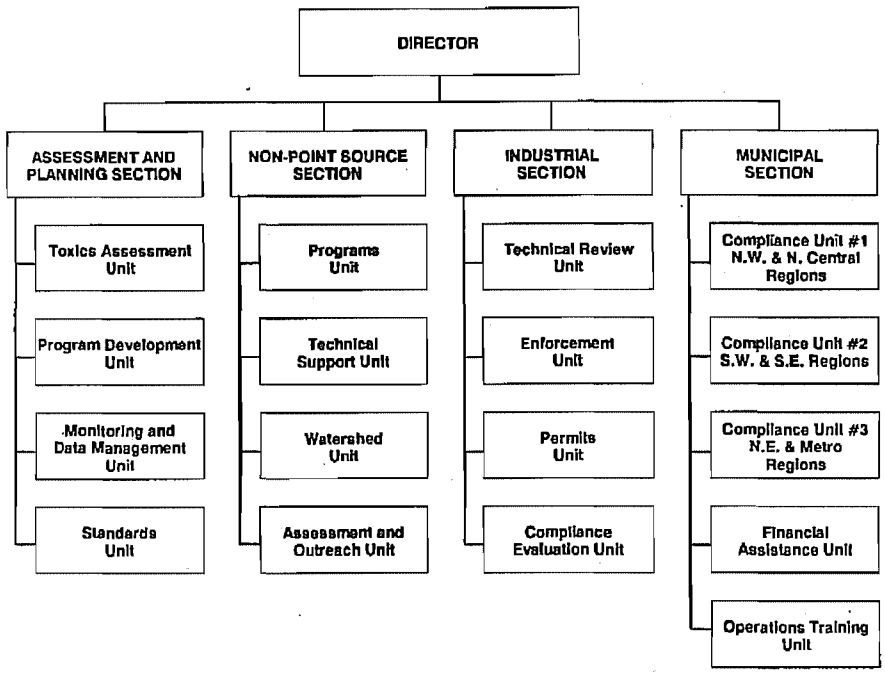


Figure 3.2: Water Quality Division Staffing

1 Division Director
1 Assistant Director
8 Clerical
3 Computer and administrative support
7 Regional staff

Municipal Section

1 Section Chief
5 Supervisors
4 Clerical staff
8 Staff in the Operations and Training Unit conduct training workshops and provide on-site assistance to treatment plant operators.

The Municipal section has three teams that each jointly handle permitting/compliance/enforcement for two of PCA's regions.

7.5 Enforcement
3 Permits
3 Sludge technical review
14 Technical review
3 Environmental review (1 staff handles all sewer extension requests)
13 Financial Assistance construction grant and loan program administration

Figure 3.2, continued

Industrial Section

1	Section chief
3	Clerical
4	Supervisors
4	Permits (including 1 FTE for the pretreatment program), 1 additional FTE is paid for by the Superfund
5	Technical review for permits and enforcement
6	Enforcement
5.5	Data tracking

Non-point Source Section

1	Section Chief
3	Clerical
4	Supervisors
4	Feedlot team
3	On-site sewage system team
10	Technical support unit includes 6 hydrologists and 3 engineers. 4 assist in groundwater non-point source issues and establish best management practices for all Clean Water Partnership projects. (1 LCMR) 1 trains and assists local government officials on monitoring for Clean Water Partnership projects. 1 establishes best management practices for non-point source. 1 water pollution computer modeling for nonpoint source. 1 wetlands restoration. 1 Minnesota River assessment project coordination.
4	Lakes team – work on Clean Lakes and Clean Water Partnership projects.
4	Rivers and ground water team – Clean Water Partnership project management.
3	Administrative management of grants for clean lakes and clean water partnership projects.
3	Assist with local water planning efforts.

Assessment and Planning Section

1	Section Chief
3	Clerical
4	Supervisors
10	Scientists and researchers work on toxic abatement research, bio-assays, standards development, and special projects including St. Louis River and LCMR studies.
10	Scientists and engineers work on standards and rules development including 3 who do field work to establish effluent limits, 2 who work on rule devlopment, 2 on LCMR funded studies, 1 on water quality certifications, 1 on biological assessments, and 1 on water quality modeling.
9	Staff work on water quality monitoring and data management including 1 FTE on data entry of water quality data, 1 on citizen lake monitoring program, 3 on ambient water quality monitoring and sampling, 2 on data analysis, 1 on a water quality study of Lake Pepin, and 1 coordinating data management for local water planning.
1	Quality control and quality assurance for laboratories
1	Rules development
1	Water quality certifications
1	Wetlands projects
1	Manages agency equipment and storage
191	Total positions as of October 1990.

gram than others in the department. Because of this it has until recently experienced less growth in personnel and programs than some other divisions. In 1987, the division had a complement of 176 positions; it currently has 191 positions. The complement assigned to the basic permitting and enforcement program has not changed significantly in recent years.

However, nonpoint source pollution programs have grown substantially. Beginning with the passage of the state Clean Water Partnership and the federal Clean Water Act amendments in 1987, nonpoint source pollution problems have received increased attention.[7] Nonpoint source pollution considers pollution problems from:

- agricultural runoff
- animal feedlots
- pesticide and fertilizer application
- urban runoff
- on-site sewage systems
- forestry
- mining runoff
- highway runoff
- erosion problems

PCA received four positions in 1987 to help implement the Clean Water Partnership (CWP) program. The CWP awards matching grants and provides technical assistance to local governments to implement nonpoint source management plans. PCA has awarded 25 grants for a total of $2.1 million since 1987 and anticipates awarding an additional $500,000 soon.

PCA has received increased funding for nonpoint pollution projects.

Although Congress authorized funding for Section 319 of the Clean Water Act in 1987, the first appropriation from Congress was not made until 1990. Minnesota received $1.2 million plus a $250,000 bonus for having one of the nation's four best nonpoint source plans. These funds have resulted in the addition of 19 positions in PCA and two in other state agencies.

The primary emphases of Minnesota's nonpoint program are the federal Clean Lakes program, the Clean Water Partnership program, and state assistance with local water planning authorized by Chapter 110B and Chapter 509. Experience with these programs is still too limited to evaluate their success. Most likely, evaluation of the development and implementation success of

7 See *Minn.. Stat.* §115.091 to 115.103 and Section 319 of the 1987 Clean Water Act.

Minnesota's nonpoint source plan will have to wait several years. However, Minnesota has a more fully developed nonpoint source program than other states, and EPA considers Minnesota's nonpoint source plan a national model. Thus, it appears that Minnesota is on the right track as it begins the process of dealing with nonpoint sources of pollution. It is also clear that nonpoint source abatement strategies are fundamentally different than the traditional technology-based solutions to point source pollution. Dealing with the land use questions associated with nonpoint pollution sources necessarily involves a wide variety of local and state governmental bodies. Whether PCA will be able to manage programs of this type remains to be seen. It is likely that the coordination of nonpoint source programs between state and local governmental units will remain a critical issue in years to come.

MINNESOTA'S SURFACE WATER QUALITY

The federal government, industry, and the citizens of Minnesota have invested approximately two billion dollars to construct treatment facilities for wastewater. Given the large investment, it is reasonable to ask about the ambient quality of Minnesota waters. While this could be the topic of a lengthy discussion, in this section we briefly summarize what is known about Minnesota's water quality.[8]

PCA has assessed roughly six percent of the almost 92,000 river and stream miles in the state. The agency has found that 43 percent of the river miles meet the fishable goal of the Clean Water Act and that 38 percent meet the swimmable goal. The agency has evaluated about 13 percent of the state's lakes and found 73 percent of those meet the swimmable goal. PCA has also sampled fish from a non-representative sample of 267 lakes to test for contamination.[9] Four of 34 large lakes sampled have no fish consumption advisories, 29 lakes have advisories recommending limited intake of certain fish, and for one lake no intake of certain fish is advised. The primary reason for the recommended limited intake of fish on large lakes sampled is mercury contamination.[10] PCA has also sampled 233 smaller lakes, of which 218 have advisories to limit intake, two have advisories recommending no consumption of certain fish, and 13 have no advisories regarding fish consumption.

Monitoring for water toxics was funded from Section 205 (j) of the Clean Water Act, which called for one percent of federal construction grant funds to be spent on planning and monitoring. However, with the decline, and now the expiration of the federal grant program, all water monitoring has been lim-

---

8 We have a number of concerns about the manner in which water quality data is gathered and used by PCA that are expressed in our 1987 report on Water Quality Monitoring. Nonetheless, PCA's data is the best available and is reliable as an indicator of water quality trends. For more information, see PCA's most recent biennial report to Congress, Minnesota Pollution Control Agency, *Minnesota Water Quality 1988-1989*, (St. Paul, 1990).

9 PCA has sampled lakes that are more heavily fished or where contamination was expected, consequently the sample is not representative of all lakes in the state.

10 According to a recent LCMR funded study, the primary source of this contamination appears to be atmospheric deposition. See Pollution Control Agency, *Assessment of Mercury Contamination in Selected Minnesota Lakes and Streams*. (St. Paul: 1989).

ited. The only ambient water toxics monitoring currently underway is associated with Legislative Commission on Minnesota Resources funded projects monitoring for mercury, dioxins, and PCBs in specific water bodies. PCA officials say that if there is any money left at the end of the fiscal year in their monitoring budget it is used for ambient toxics monitoring. PCA analyzed a limited number of samples for pesticides in fiscal years 1988 and 1989.

Ambient water quality monitoring has been reduced.

Although PCA has proposed increased funding for its monitoring efforts, the Legislature has chosen not to fund increased monitoring. For the 1990-91 biennium, the Legislature moved the responsibility for the fish contamination sampling from PCA to the Department of Natural Resources. DNR received a $400,000 appropriation to do increased fish sampling and analysis. In the first year of the biennium DNR analyzed the backlog of 1,200 fish samples that PCA had stockpiled. In fiscal year 1991 DNR collected 3,000 fish for analysis from a representative cross-section of lakes in the state.[11] DNR plans to have the samples analyzed primarily for PCBs and mercury, although some samples will be analyzed for volatile organic compounds as well. DNR is also doing health profiles on 100 fish to determine how they are affected by the ambient water quality. DNR's plan also called for analyzing a limited number of samples for the component compounds of PCBs, since recent research indicates that some compounds are more toxic to health than others. However, this work has been deferred because of fiscal year 1991 budget shortfalls.

As Table 3.1 shows, the major reason that lakes and streams do not support their designated uses is nonpoint rather than point sources of pollution. Nonpoint sources of pollution tend to impact on the whole waterbody, while the effects of point sources of pollution tend to be more localized. This fact is the reason behind recent state and federal nonpoint source pollution initiatives.

Nonpoint sources are the most significant reason for not meeting water quality goals.

Table 3.1: Waters Not Fully Supporting Uses Due to Point and Nonpoint Sources of Pollution

Source	Major Impact	Moderate/Minor
RIVER (miles)		
Point Source		
Municipal	62	27
Industrial	556	696
Nonpoint Sources	2,577	684
LAKES (acres)		
Municipal Point Source	147,136	
Nonpoint Sources	2,015,489	

Source: Minnesota Water Quality, Years 1988-1989, 10.

11 The 3,000 fish are processed into about 800 composites for analysis purposes.

PERMITTING AND ENFORCEMENT

Permitting

The Clean Water Act requires that all dischargers of waste into surface waters receive a permit under the National Pollution Discharge Elimination System (NPDES). Permits are normally issued for a five year period. PCA uses the permit process to periodically assess permittees' discharges and permit conditions to ensure they are in compliance with current Minnesota statutes and rules.

NPDES permits have somewhat different requirements for municipal and industrial permittees. In addition, permit requirements and monitoring vary depending upon whether the permit is classified as major or minor.[12] EPA follows major permits closely and reviews and approves them before issuance. Table 3.2 shows a breakdown of the water permits issued by PCA. The table shows that about nine percent of the 918 NPDES permits are major permittees. Although few in number, major facilities account for over 70 percent of the state's total wastewater discharge flow.

Table 3.2: Number of Water Quality Permits By Type of Permit

	Major	Minor		
	NPDES	NPDES	SDS[a]	Total
Municipal	53[b]	479	40	572
Industrial	28	358	146	532
Total	81	837	186	1,104

Source: Pollution Control Agency, November 1990.

[a]SDS includes land application, sludge disposal, pretreatment, and dredging.

[b]Includes St. James and Zumbrota which will be classified major when plant upgrades are complete.

Municipal permits generally require monthly reports on the characteristics of the water they discharge, such as fecal coliform bacteria, biochemical oxygen demand, total suspended solids, and pH. Recent major municipal and industrial permits have also required an increased monitoring for water toxics (such as heavy metals or PCBs). PCA had issued 16 permits with toxics monitoring requirements as of November 1990, with an additional 12 permits in various stages of drafting and review. The new permit requirements commonly call

12 Major municipal facilities are generally those with discharges exceeding one million gallons per day usually with a service population greater than 10,000. The definition of industrial major facilities is more complicated. Major industrial facilities are designated based on factors such as the discharge flow, pollutant loadings, potential public health impacts, and water quality factors. Other municipal or industrial facilities can be considered major if they have the potential to cause significant water quality problems.

for permittees to conduct bio-monitoring and allow the permit to be "re-opened" if toxicity to aquatic life is found.

Industrial permit requirements vary depending upon the way in which the water is used before discharge. Requirements vary from daily monitoring of a wide variety of water quality parameters in refineries and paper plants, to monitoring only for PH, temperature, and flow in industries using only non-contact cooling water.[13]

Minnesota has issued eight NPDES permits to feedlots. Feedlots with a discharge and more than 1,000 animal units are included in the NPDES program and the remainder of feedlots with more than 10 animal units are required to submit a permit application.[14] There are somewhere between 50,000 and 70,000 feedlots in the state and PCA has certified or permitted approximately 16,000 since the program began. PCA has delegated authority to run the feedlot program to 23 counties around the state, with the remainder handled by four staff in St. Paul. Operators must submit an application for a feedlot permit to PCA or the county. The operators are then either issued a certificate of compliance if there are no problems, or issued an interim permit containing a schedule to remedy problems within 10 months. PCA does issue a few feedlot permits for larger operations, but over 80 percent of the applications result in certificates of compliance. Approximately 400 to 500 feedlots are issued certificates or permits each year with approximately 300 reviewed by the state and the remainder by counties with delegated programs.[15]

In addition to NPDES permits, Minnesota also issues State Disposal System (SDS) permits. Some municipal sewage, sewage sludge, and industrial wastes are disposed of by land application such as spray irrigation. PCA regulates these activities through SDS permits. SDS permits generally require permit holders to monitor ground water at sites where the waste is applied and to submit quarterly or annual reports.

Table 3.3 shows the number of permits issued by type in the last five years. According to division personnel, about 90 percent of the permits issued are renewals of existing permits. PCA notifies permittees by mail nine months before their permits are scheduled to expire. New applications must be filed 180 days before the permit expires or the permit lapses on the expiration date. If the application is timely and the permittee is in compliance with the current permit, they can continue to operate under existing limits until the new permit is issued.

Permit requirements vary depending on the classification of the receiving water body and the type of treatment facility. The permit issuance process includes checking with the technical standards personnel to see if the classifica-

---

13 Non-contact cooling water is water used to cool buildings or machinery that does not come into direct contact with any manufacturing process or other product. Sometimes a biocide or chlorine is added to prevent bio-fouling of the cooling system.

14 The waste from one animal unit equals approximately that produced by a cow. For example 100 chickens equal one animal unit.

15 The agency has recently formed a feedlot advisory group made up of representatives from producer and environmental groups and other state agencies to provide future direction to the feedlot program.

Table 3.3: Permits Issued, FY 1986-90

	1986	1987	1988	1989	1990
Municipal					
Major	7	11	6	7	12
Minor	87	115	145	172	72
Industrial					
Major	6	3	5	8	2
Minor	62	86	47	58	45
Total	162	215	203	245	131

NOTE: This table reflects the reclassification of certain domestic treatment facilities as minor municipal.

tion of the receiving water or the effluent standard has changed, and checking with the enforcement staff to see if the facility is in compliance with existing standards. The permit staff fill out a draft permit checklist that documents the permit process. Once the checklist is complete a public notice of the intent to issue a permit is issued. There are very few facilities that receive public comments as the result of the public notice of the proposed permit.

We examined the length of time for permit reissuance in our sample.[16] We found:

- **The median length of time between the application and permit reissuance was about nine months. Most permits were not reissued before the previous permit lapsed. Permittees generally were timely in submitting their applications, but PCA staff did not begin their reviews early enough to ensure that permits were issued before they were scheduled to expire.**

Most permits are past expiration dates before they are reissued.

The median length of time that permits were past the expiration dates before being reissued was three months. As of October 1990, there were 193 expired permits. Twenty-eight had been put on public notice, but 165 had not. PCA does not intend to reissue some of these permits for a variety of reasons. During the mid-1980s, PCA decided to not put some very small municipalities on the national municipal list because they would never be able to afford to meet secondary treatment standards.[17] PCA officials told us that there were probably a "dozen or so" municipalities with lapsed permits in this category. In addition, some of the expired permits are for facilities that will be hooking up to a municipal treatment system, or for facilities that will be covered by a general permit.

16 We examined 120 permits chosen at random and stratified by type and size. Not all dates were available in each of the permit files.

17 One of these facilities was in our sample; it is is one of the few facilities in the state that still discharges partially treated sewage to surface waters.

Permits do not expire if the application has been filed properly, but as we noted in reviewing air quality permits, permittees are not notified whether their previous permit remains in effect or not. We found approximately 10 percent of applications in our sample were not timely, and undoubtedly many were not strictly compliant with permit conditions, leaving many permittees technically without a permit for a period of time.[18]

According to division personnel, the goal is to begin working on the new permit two to three months before the previous one expires. However, we found this goal was not met. In our sample, we found that once the review process begins permit issuance progresses fairly routinely. Permits were issued promptly (a median of 54 days) after they had appeared on public notice.

Permit progress is not routinely reviewed.

We also found that there is no "exception tracking process" in place for permits. That is, there was no routine comparision of permits scheduled to be issued and permits actually issued nor is there a report on the status of permits overdue for issuance.

We also examined how quickly new permits are issued. Because of PCA's recordkeeping, it is difficult to determine how long new permits take to issue. We did find that as of August 15, 1990 there were 104 new applicants waiting for permits, although some of them had been waiting for several years. PCA staff said that approximately 30 of these were for pump outs or other types of activities for which PCA is developing generic permits. These permits will be issued when the generic permit forms are approved.

We recommend that:

- **PCA should take steps to streamline its permitting process.**

We believe the permitting process can be streamlined in several ways. PCA should set up a target reissuance date for each permit scheduled to expire. Since most permit reissuances are noncontroversial, they should be handled routinely. On a set schedule, before the permit expires, the relevant information for the list of all expiring permits should be transmitted to the technical standards unit and the enforcement unit. In addition, a query of the computerized database should identify the effluent discharge history of the facility. Both the enforcement unit and the technical standards unit should be required to respond to the upcoming permits within a set time period. By routinely getting internal reviews ahead of time from other units in the division, the permitting staff will be able to process the permit more promptly. Once this information is available, in most cases it is a simple process to put the new permit on public notice and then reissue it. When PCA anticipates there will be problems with issuing the permit, it should begin its review process well ahead of time and clearly communicate to the permittees the applicable federal and state standards that apply. For example, for those facilities likely to

18 PCA staff interpret *Minn. Rules* 7001.0160 to require a determination from the commissioner that permittees are noncompliant with permit conditions before a permit would lapse. Since PCA does not conduct a review when the permit application is submitted, permittees that have submitted timely applications continue to operate under valid previous permits.

be affected by new standards for water toxics, communications regarding the new requirements should begin well ahead of time.

PCA should also finish the process of implementing generic permits for certain noncontroversial dischargers. For example, PCA should implement generic permits for dischargers of noncontact cooling water and pump outs of contaminated ground water. PCA should consider whether certain classes of noncontroversial state disposal system permits can be issued for longer than five years.

Monitoring Compliance

Accuracy of monitoring reports

Minnesota's regulatory system for water pollution relies on self-monitoring and reporting by permit holders. NPDES permittees are required to monitor their discharges and the operational characteristics of their treatment plants and report the results to PCA on a regular schedule, usually monthly. Some larger municipalities and industrial facilities take water samples and analyze them in their own labs, while smaller facilities usually rely on private contract laboratories.

Because the system rests on the accuracy of the results submitted by permittees, accurate and complete reporting is essential. Accurate reports are ensured by properly trained treatment plant operators, quality control in laboratories, adequate monitoring plans, and cross checks of independently examined samples by PCA.

Minnesota statutes require that municipal treatment plant operators be certified according to the type of treatment facility they operate.[19] There are approximately 1,800 certified operators in the state. PCA maintains that properly trained operators can increase the efficiency of treatment systems by up to 50 percent. However, we found that:

- **There are many municipal treatment facilities that do not have properly certified operators.**

As of July 1, 1990, 94 of the 531 municipal facilities had operators uncertified at the proper classification. Large treatment facility operators tend to be properly certified; 41 of 42 class A facilities and 54 of 67 class B facilities had operators at the proper classification. On the other hand, only 72 of 97 class C facilities and 270 of the 325 smallest treatment works (Class D) had properly certified operators.

We also found that PCA has inconsistently enforced the requirement for certified operators. In some cases, the agency has issued notices of violation for uncertified operators, in some cases it has written letters soliciting operators

---

19 Minn. Stat. §115.71.

to attend training seminars, and in other cases no action has been taken. We recommend:

- **PCA should consistently enforce the requirement that municipal treatment plants have properly certified operators. In addition, PCA should consider requiring the certification of industrial operators that operate treatment plants similar to those used for municipal treatment.**

Monitoring plans are not always submitted.

Permittees are required to submit monitoring plans that describe their procedures for gathering and analyzing water samples.[20] The monitoring plans describe the type of sample and the sampling and analysis plan for the required water quality parameters. We found that there are a number of facilities that either had never submitted a plan or had not submitted an updated plan. We could not find a monitoring plan in 15 of the 120 permit files we reviewed. A computer review of permittees revealed that at least 160 facilities had not submitted the required monitoring plans. Review of the facilities in our sample showed that the monitoring plans were reviewed once they were submitted. However, if the monitoring plans were not submitted, permittees were not routinely contacted.

A third way of ensuring the accuracy of water samples is to require certified laboratories to conduct certain water quality analyses. In a previous study we noted problems with the analysis of water samples and recommended that a state certification program for laboratories be established.[21] The Legislature gave the Commissioner of Health authority to promulgate rules to certify environmental laboratories in 1988 and the department has recently adopted rules.[22] PCA has notified permittees that they will be required to use certified laboratories beginning January 1, 1991.

The fourth method of ensuring the accuracy of monitoring results is to independently sample water discharges by taking a "split sample" of water that will be analyzed by more than one lab. Comparisions of the facility lab results with those from the PCA lab can identify problems with lab or sample quality controls. PCA officials sometimes sample water quality during inspection visits to facilities. We discuss this in greater detail below.

Enforcement of Permit Conditions

Enforcement consists of identifing instances of noncompliance, choosing an appropriate response, and following through on the enforcement action. Permit violations are identified through reviews of a computerized database, inspections, manual reviews of facility files, and responses to complaints. The

---

20 Since 1988, all permittees have been required to submit new plans within 45 days of receiving their new permits. Prior to 1988, new plans were required only if there were changes in the parameters being analyzed.

21 Office of the Legislative Auditor, *Water Quality Monitoring* (St. Paul: February 1987) 75-78.

22 *Minn. Stat.* §144.97 and *Minn. Rules* Ch. 4740.2010.

enforcement action taken is dependent on a number of factors including the seriousness of the violation, the frequency and duration of violations, the facility's history of compliance, and the availability of staff resources.[23]

Permit Compliance System

PCA requires all permittees to periodically report on their effluent and other operational characteristics in discharge monitoring reports. The data from these reports are entered into a computerized database known as the Permit Compliance System (PCS). EPA requires that PCS be used to store permit conditions and effluent reports and to generate certain management reports. As we mentioned earlier, EPA is almost exclusively concerned with major facilities. As a result, PCA has been somewhat slow to enter data on minor industrial facilities into the database. However, the agency is now in the process of entering data on these facilities into the database and expects to have all facilities on the system in 1991. In addition to effluent reporting data, PCA also uses the database to store information on inspections, enforcement actions, and dates of required actions.

The division has not effectively used its information system to identify noncompliance.

PCS offers a tremendous amount of detail on the activities of permittees and it should be a primary means of identifying permittee noncompliance. However, we found that staff and management do not routinely use PCS to generate information on violations or progress in bringing facilities into compliance. There are a variety of reasons for this lack of use. Some staff are reluctant to deal with a computerized system, and others consider it difficult to use or have had past difficulties with the system. We recommend:

- **PCA should routinely generate standard reports containing information on facility compliance, and planned versus actual achievements of inspections, scheduled events, and permit issuance. Supervisors should review variance reports to ensure that staff efforts are appropriately focused on high priority items.**

- **PCA should investigate ways to make the PCS system easier to use.**

Since PCS is an EPA designed and maintained system, it is not designed to directly address PCA's reporting and management needs. Nonetheless, we believe that PCS can be used in conjunction with PCA designed reporting to meet most management information needs. The division has recognized this problem, and it has formed a task force to investigate ways to make PCS easier to use.

Inspections

Inspections are conducted largely by PCA's regional staff. PCA currently has one inspector assigned to each region to conduct wastewater treatment plant inspections. EPA requires 90 percent of major facilities to be inspected annually and PCA has a goal of inspecting minor facilities once every 5 years. PCA

23 The enforcement process that PCA tries to follow is documented in the Division's Enforcement Management System.

commits to do a certain number of inspections each year in the annual program plan it negotiates with EPA. Historically, municipal minor facilities have been inspected more often than industrial minor facilities, reflecting EPA priority on municipal facilities.

Several types of inspections are conducted, ranging from the most cursory reconnaissance survey to complete reviews of facility compliance. The most common type of inspection is a compliance monitoring survey, which includes a review of operations and discharge monitoring reports and a determination of whether or not facilities are in compliance with their permits. Sometimes inspectors take water samples to monitor for standard parameters. Many facilities have also had biomonitoring reviews to determine how toxic their effluent is to aquatic life.

Table 3.4 lists the number of major facility inspections by type in the last five years and Table 3.5 shows the same data for minor facilities. We reviewed the list of all inspections conducted in the last five years and found:

- **PCA is meeting the goal of inspecting major facilities annually, but it has not met its inspection goals for minor facilities.**

Table 3.4: Water Quality Division, Inspections of Major Permittees

	Municipal	Industrial
Total of permittees	51	28
Total permittees inspected since 1985	51	28
Total number of inspections since 1985	318	129
Total sampling inspections since 1985	27	16
Total biomonitoring assessments	127	33
Number of permittees with biomonitoring assessments	50	14

Table 3.5: Water Quality Division, Inspections of Minor Permittees

	Municipal	Industrial
Total of permittees	519	504
Total permittees inspected since 1985	333	47
Total number of inspections since 1985	468	52
Total sampling inspections since 1985	7	2
Percent of inspected permittees with sampling inspections since 1985	2.1%	4.3%
Total biomonitoring assessments	307	6
Number of permittees with biomonitoring assessments	207	5

Many facilities, especially minor industrial, have not had recent inspections.

180 municipal minor (35 percent) and over 450 industrial minor (91 percent) facilities have not been inspected in the last five years. Our sample of facilities showed that there are many that have not been inspected for longer periods of time. The table also shows that most municipal facilities have had the toxicity of their effluent assessed at least once using biomonitoring techniques. However, almost no minor industrial facility effluent has been assessed. Many industrial facility discharges, even non-contact cooling water discharges, may be toxic to aquatic life.[24]

Periodic inspections are necessary to ensure continuing compliance with permit conditions. We estimate from our sample review that over one-half of minor facility inspections found permittees not in full compliance with their permit conditions. A review of inspections entered into PCA's database between July 1989 and November 1990 showed that 13 of 54 major inspections and 71 of 111 minor inspections revealed permittees not in full compliance with their permits. We also found that PCA did not routinely follow up inspections to determine if noncompliant permittees had come back into compliance.

Only a small percentage of permittees have their effluent checked by PCA in sampling inspections. As we mentioned earlier, this may become less important in 1991 when the Department of Health begins certifying laboratories that analyze water samples.

Compliance With Permit Conditions

We examined water permittee compliance with permit conditions by using PCA's information systems and through manually reviewing files. We used the PCS system to identify various types of violations for fiscal year 1990. Since the goal of the enforcement system is to move permittees into compliance over time, we felt using the most recent fiscal year as a basis of judging compliance was the most reasonable time period. A review of longer or earlier periods of time would show higher rates of noncompliance.

Complete compliance with effluent limits has not been achieved.

We feel effluent violations are the most critical element of the compliance system because they are exactly what permittee reporting, permits, and treatment plant upgrades are designed to prevent. Tables 3.6 and 3.7 show effluent violations for 1990. The tables show that:

- **Complete compliance with permit effluent limits is spotty at best.**

Over 40 percent of municipal plants and 70 percent of major industrial permittees had one or more violations during fiscal year 1990. However, effluent violations are more serious if they occur often or are significantly above permit limits. The tables show that about 14 percent of industrial major, 11 percent of municipal major, and 6 percent of municipal minor facilities had effluent violations in six or more months in fiscal year 1990. The frequency of industrial minor facility violations are more difficult to determine because

24 According to PCA staff, non-contact cooling water may be toxic because of the chlorine or biocides used as bio-fouling agents.

Over 40 percent of municipal facilities had an effluent violation, but repeated violations were less common.

Table 3.6: Municipal Effluent Violations, FY 1990

	Major Facilities	Minor Facilities
Total permitted municipalities	53	518
Municipalities in violation	26	206
Percent of municipalities in violation one or more times	49%	40%
Number of violations	150	1,073
Number of months in violation	91	594
Average number of months in violation per municipality	3.8	2.8
Municipalities in violation three or more months	14	80
Municipalities in violation six or more months	6	29
Municipalities in violation during June 1990	11	61

Table 3.7: Industrial Effluent Violations, Major Permittees, FY 1990

Total permitted industries	28
Industries in violation	20
Percent of industries in violation	71%
Number of violations	126
Number of months in violation	67
Average number of months in violation per industry	3
Industries in violation three or more months	8
Industries in violation six or more months	4
Industries in violation during June 1990	10

they are not yet on the computer system. However, in our sample of 47 minor industrial facilities approximately 30 percent had one or more effluent violations, and 13 percent of permittees had violations in three or more months. We also noted in our file reviews that once new treatment plants become operational the effluent violations generally stop.

In addition to effluent limits, permits usually include requirements for periodic reporting of discharges and operation and maintenance of treatment facilities. Some facilities have additional reporting requirements associated with construction grants or past enforcement actions. Construction grants, stipulation agreements, and consent orders entered into under the National Municipal Policy require reporting on whether certain milestones have been met. We examined compliance with reporting and schedule requirements through an examination of the computerized database and a review of the paper files for our sample of permittees. We found that:

- **Most major facilities meet reporting and schedule requirements, but minor permittee compliance is inconsistent.**

Table 3.8 shows municipal reporting violations. In most cases these represent the permittee's failure to report on all of the water quality parameters required by their permit. That is, the permittee sent in a discharge monitoring report, but failed for some reason to submit a value for one or more required parameters. In other cases, the permittee did report a number for the concentration of the parameter but not the total amount or quantity of the pollutant discharged. While undesirable, reporting violations of this type are generally not serious as long as they are not part of a continued pattern of noncompliance.[25]

Table 3.8: Municipal Reporting Violations, FY 1990

	Major Facilities	Minor Facilities
Total permitted municipalities	53	518
Municipalities in violation	12	153
Percent of municipalities in violation	23%	30%
Number of concentration absent violations	38	541
Number of quanitity absent violations	43	468

Table 3.9 shows municipal and Table 3.10 shows industrial schedule violations during fiscal year 1990. Schedule violations occur when the permittee fails to meet a scheduled milestone date or fails to submit a required report on construction progress. The table shows that the major facilities generally met the terms of their permits and construction grant schedules. Minor facilities, on the other hand, were less likely to meet the requirements. Over 20 percent failed to submit one or more of the required reports. As we noted earlier, many of the minor facilities failed to submit monitoring plans. In reviewing our sample, we found the same trend held true for minor industrial permittees.

Table 3.9: Municipal Schedule Violations, FY 1990

Number of Permittees Failing to Submit	Major	Minor
Monitoring plans	0	63
Construction schedule related reports	3	40
Other required reports	1	34
Total Number of Permittees With Schedule Violations*	4	115

*The total number of minor permitteees does not sum because some failed to submit more than one type of report.

We found that PCA promptly reviews the monitoring plans when they are submitted and corresponds with the permittees about any deficiencies. However,

25 If the permittee has reported the concentration or the amount and also the discharge flow then the other amount can be calculated.

Table 3.10: Industrial Schedule Violations, FY 1990

	Major	Minor
Monitoring Plan		
Not Received	0	113
Received Late	2	17
Quarterly/Semi/Annual Report		
Not Received	1	48
Received Late	0	4
Progress Report		
Not Received	0	18
Received Late	3	3
Other Report		
Not Received	4	27
Received Late	1	0
Schedule Date		
Not Achieved	0	10
Achieved Late	5	4

PCA has not always followed up on late reports.

We found that PCA promptly reviews the monitoring plans when they are submitted and corresponds with the permittees about any deficiencies. However, PCA has not consistently followed up on the failure to submit monitoring plans or other required reports. PCA currently follows up only if enforcement officers happen to note the failure when next reviewing the facility. We recommend:

- **PCA should develop a process to systematically and promptly follow up on the failure to submit required reports.**

PCA officials told us that they had plans to begin systematically sending letters to permittees failing to submit required reports.

Significant Noncompliance

EPA has developed a methodology for assessing the significance of effluent violations, not meeting scheduled compliance dates, and reporting deficiencies. EPA requires that PCA submit this Quarterly Non-compliance Report (QNCR) for major facilities.[26] Violations are reported based on the facility's performance in the previous six-month period—the quarter for which the report is prepared and the previous quarter. There are five types of violations that can cause noncompliance with an NPDES permit: effluent violations, schedule violations, reporting violations, enforcement order violations, and other so called "narrative" violations. Effluent violations are reportable if

26 EPA developed the QNCR because staff resources did not allow them to follow up on every violation for major facilities. The reporting requirements are set out in federal rules, *40 CFR* 123.45 (a)(2).

they exceed 120 percent of the permit limit for toxic substances or 140 percent of the limit for conventional pollutants in two of the six months.[27] In addition, a violation of any pollutant monthly average limit in four or more months of the period is considered a chronic violation and must be reported. Schedule violations consist of not meeting a compliance schedule date contained in a permit, stipulation agreement, or consent order. Scheduled events that are more than 90 days late must be reported on the QNCR. Permit reporting violations occur when required reports, such as discharge monitoring reports or compliance schedule progress reports, are incomplete or not received within 30 days of the due date. Enforcement order violations are reported when any condition of the enforcement order is violated or any violation of a monthly average discharge limit occurs. Other permit requirement violations that must be reported include: violation of pretreatment program requirements, or any other special EPA area of concern.

EPA acknowledges that there are a variety of other circumstances that can cause serious water quality or health problems that would not appear on the QNCR.[28] Nonetheless, the QNCR is a useful tool for considering the effectiveness of compliance monitoring and enforcement efforts.

Significant noncompliance has been lower in Minnesota.

We reviewed the QNCRs for the last year to assess what percent of the reporting, scheduling, and effluent violations met EPA's criteria. Table 3.11 shows the number of major permittees appearing on the QNCR during state fiscal year 1990, the reason for appearing on the report, and whether they were back in compliance. Minnesota's compliance rate for major facilities was relatively high by EPA's definition. Depending on the quarter of 1990, between 70 and 93 percent of industrial facilities and between 77 and 89 percent of municipal permittees were in complete compliance. Only one industrial and two municipal facilities remained out of compliance by EPA's definition during all four quarters of 1990. According to EPA officials, Minnesota historically has been viewed as maintaining a high compliance rate compared to other states.

In summary, PCA has done a relatively good job of monitoring and bringing major facilities into compliance with permit requirements. However, there are compliance problems with minor facilities, particularly minor industrial facilities. In the next section we review how well PCA follows its Enforcement Management System process for escalating enforcement when permittee's violate their permit limits.

Enforcement Actions

All noncompliance with permit conditions is subject to enforcement action. However, PCA tries to examine a number of factors in determining whether an enforcement action is called for.

The normal enforcement action process calls for an escalating series of enforcement steps in order to gain compliance with the permit. This process is il-

27 The specific list of Group I pollutants that we have categorized as conventional and Group II pollutants that we labeled toxic is set out in the federal rule.

28 For example, a single serious effluent discharge violating permit limits, frequent violations for different parameters, and unauthorized bypasses or discharges are not reportable.

Table 3.11: Quarterly Noncompliance Report, FY 1990

Type	7-89 - 9/89	10/89 - 12/89	1/90 - 3/90	4/90 - 6/90
Municipal Compliance Status				
Total permittees cited	19	18	19	15
Permittees in noncompliance	6	11	12	12
Permittees in interim compliance[a]	8	3	3	1
Permittees in full compliance[b]	5	4	4	2
Reason Cited				
Reporting violation	9	13	17	12
Effluent violation	6	1	0	1
Schedule violation	2	0	1	0
Multiple violations	2	4	1	2
Industrial Compliance Status				
Total permittees cited	18	8	10	11
Permittees in noncompliance	5	2	7	8
Permittees in interim compliance	3	1	1	2
Permittees in full compliance	10	5	2	1
Reason Cited				
Reporting violation	13	6	7	8
Effluent violation	4	1	1	2
Schedule violation	0	0	0	0
Multiple violations	1	1	2	1

Source: Minnesota Quarterly Noncompliance Report.

[a]Permittees in this category are generally resolving violations through a compliance schedule set out in a formal enforcement action.
[b]Once permittees return to full compliance, they are carried on the QNCR for one more quarter.

lustrated by Figure 3.3 which shows that PCA begins with informal enforcement actions and if compliance is not achieved moves to the formal notice of violation. A notice of violation sets out the alleged violations and requires the permittee to respond within 30 days.

Table 3.12 shows that PCA issued approximately 65 notices of violation (NOV) in each of the last three years. In reviewing our sample and PCA's computerized records we found that:

Notices of violation have not always been effective in bringing about compliance.

- **PCA has been reluctant to take further enforcement actions when notices of violation do not result in compliance.**

For example, one small city received a NOV in 1984 for not submitting any monitoring reports in the previous three years. It received another NOV in 1985 for not submitting reports and failing to apply for a new permit. PCA inspected the facility in 1988 and noted that there had been no discharge from the wastewater treatment pond in the past 10 years, the operator was uncertified and the secondary pond cell was dry and full of weeds. The city then began submitting discharge reports but has since stopped and has not sub-

Figure 3.3: Enforcement Evaluation and Action Process

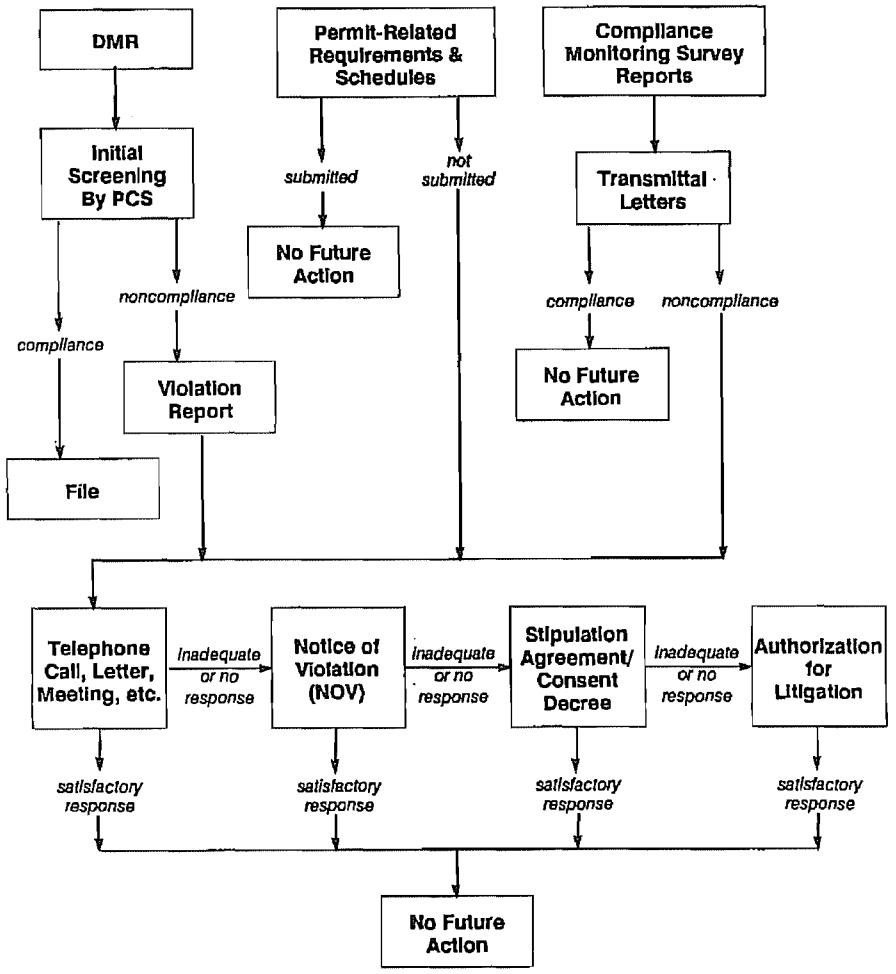


Table 3.12: Notices of Violation Issued, FY 1988-90

	1988	1989	1990	Total
Municipal				
Major	7	6	3	16
Minor	42	44	37	122
Industrial				
Major	1	0	4	14
Minor	14	23	1	47
Total	64	82	53	199

NOTE: The total considers domestic treatment facilities such as trailer parks as municipal minors.

mitted any since February of 1989. PCA wrote the city in April 1990 about the failure to submit reports but it had not yet responded.

Another small city with leaking wastewater treatment ponds was issued a NOV in January 1988 and was required to submit a written corrective action plan. However, the city did not submit a plan and PCA did not follow up again until April 1990.

Table 3.13 shows that the majority of permittees with 1990 effluent violations in more than three months had not yet been subject to formal enforcement actions by PCA.

Table 3.13: Repeated Effluent Violations Resulting in Enforcement Actions, FY 1990

	Major Facilities		Minor Facilities	
Municipalities in violation three to six months[a]	8		42	
Number resulting in enforcement actions[b]	1	(12.5%)	19	(45.2%)
Municipalities in violation six or more months	5		18	
Number resulting in enforcement action	4	(80.0%)	3	(16.7%)
Industrial permittees in violation three to six months	4		—[c]	
Number resulting in enforcement actions	2	(50.0%)	—	
Industrial permittees in violation six or more months	2		—	
Number resulting in enforcement actions	1	(50.0%)	—	

[a]Includes permittees already in violation stated number of months by May 1, 1990.
[b]Includes enforcement actions from FY 1990 and consent decrees and stipulation agreements in effect from previous years.
[c]Not all industrial minor facilities have been entered into the reporting system yet.

If a facility does not respond to a NOV, or responds unsatisfactorily, the next step in the enforcement process is to try to negotiate a stipulation agreement or consent order with the permittee. The goal of these negotiations is to set up an enforceable schedule, generally with monetary penalties, for bringing the permittee into compliance. If the agency is unable to negotiate an agreement with the permittee, the next step in the process would be to seek authority from the board to initiate legal action.[30] However, we found that:

30 The Attorney General maintains the ultimate authority to initiate any legal action involving the state.

- **In practice, the division has rarely used stipulation agreements and almost never takes permittees to court.**

The division has been reluctant to escalate enforcement actions.

Table 3.14 shows stipulation agreements and consent decrees since 1986. PCA has entered into 25 stipulation agreements since 1986, all but three with municipalities. Consent decrees make up the remainder of PCA's formal enforcement actions. There have been 68 consent decrees entered into since 1986, all but two with municipal facilities. The vast majority of these, 62 of 68, were entered into at EPA's insistence as part of the National Municipal Policy. EPA required states to institute legally enforceable schedules with municipal facilities that would not meet the Clean Water Act goals by July 1, 1988. The only legal actions since 1986 have been two EPA initiated suits against the Metropolitan Waste Control Commission.[30]

Table 3.14: Stipulation Agreements and Consent Decrees, 1986-90

	1986	1987	1988	1989	1990[d]	Total
Stipulation Agreements[a]						
Major Facilities	0	3	1	0	0	4
Minor Facilities	2	7	3	5[b]	4	21
Consent Decrees						
Major Facilities	0	1	4	2[c]	0	7
Minor Facilities	0	3	35	15	8	61
Total	2	14	43	22	12	93

[a]Municipal facilities except as noted.
[b]Includes three industrial facilities.
[c]Industrial facilities.
[d]Through October 1990.

PCA's experience with an industrial permittee in our sample shows that even stipulation agreements can be ineffective in the case of recalcitrant permittees. This facility had a history of problems dating back to 1981. After a number of contacts with the facility PCA issued a NOV in 1982. In early 1983 a stipulation agreement was drafted that called for remedial actions. Violations continued despite numerous enforcement letters and another notice of violation. After two years of negotiation the violator eventually entered into a 1985 stipulation agreement that contained a schedule of actions to resolve the long standing deficiencies. Since 1985 there have been at least four more notices of violation, at least eight inspections documenting problems, and numerous enforcement letters. In 1988, the agency assessed $190,000 in penalties pursuant to the stipulated agreement, but then agreed to let the permittee collect additional information and to reduce the penalties if it made progress on resolving some of the violations. Little progress has been made to date and the penalty assessed has not yet been paid. Since the fall of 1989 the agency

30 One action that was brought by a citizen's group and later joined by both EPA and PCA resulted in a consent decree being signed with Koch Refining.

has been working on drafting and negotiating a consent decree. After failing to get a signed consent decree, PCA finally sought board approval in September 1990 to request the Attorney General to initiate litigation.

We recommend that:

- **PCA should revise its enforcement management system so that it is clear when increased enforcement responses are called for.**

We reviewed a sample of 14 facilities that had entered into stipulation agreements or enforcement actions with PCA to see how closely PCA followed these facilities. We found that PCA had properly identified violations of the agreements and sought the stipulated penalties in all but two cases. In those two cases the violations were recent and had not yet been followed up. On average it took PCA four months to identify noncompliance that violated the agreement, although in one case PCA took a year to assess the penalties. It is important to act promptly to notify permittees of violations of stipulation agreements or consent decrees because continuing violations incur additional stipulated penalties.

We also found in these 14 cases that violations of the consent decrees or stipulation agreements stopped after completion of new treatment plants. It appears to us that consent decrees and stipulation agreements usually have been effective in gaining compliance with water quality standards.

Negotiating stipulation agreements is very time intensive, according to staff. This is partially because permittees are required to agree to the terms of the stipulation. In some cases, they have few incentives to cooperate with PCA. With most municipalities, PCA's only leverage is threats to not approve sewer extensions. PCA can hold up reissuance of permits, but for municipalities this has little practical effect. With recalcitrant industrial facilities, leverage is even more limited, given PCA's past reluctance to initiate court actions. We recommend:

- **The Legislature should authorize PCA to utilize administrative penalties in some circumstances.**

Administrative penalties would help gain compliance more often and more quickly.

Administrative penalties have been used effectively in the Hazardous Waste Division to prompt compliance with the law. We believe that PCA could more effectively use its enforcement staff and gain compliance with water quality standards more often and more quickly if they had an enforcement tool to use after NOV's fail to work. The large amount of staff time associated with stipulation agreements and court actions makes these tools a last resort that PCA has been reluctant to use.

Enforcement priority is currently given to major facilities, followed by minor municipal and other minor facilities. However, in our review of inspections, permits and enforcement actions, it was difficult to discern a pattern to PCA's approach to minor facility compliance, with the exception of those that were part of the National Municipal Policy effort. We recommend that:

- **PCA should formally set priorities for its permitting and enforcement approach toward minor facilities.**

One component of setting priorities is to assess how often facilities should be reviewed by the agency. Many states have utilized the concept of a "significant minor" facility to differentiate facilities whose discharge has more potential to cause environmental damage. Significant minor facilities should be inspected and reviewed on a more regular schedule than other less important dischargers.

OTHER ISSUES

Fees

PCA charges a number of fees to defray part of the costs of the water quality program. Each permit holder is charged a $60 application fee, an annual fee, and a permit processing fee that is levied approximately every five years when permits are renewed. The fees are deposited into the special revenue account and are expected to be related to the division's special revenue appropriation.

The processing and annual fees are based on the amount of wastewater discharged. Annual fees vary from $110 for small "minor" dischargers to $83,500 per year for the main Metropolitan Waste Control Commission plant. Permit processing fees vary from $1,250 for the smallest facilities to $62,600 for the main metro plant.

PCA fees are higher than in other states in EPA Region 5. Despite this, Minnesota's fees do not fully cover the costs of issuing and enforcing permit conditions. As we discuss more fully in Chapter 6, we believe it is reasonable for businesses discharging wastes to pay for the cost of permitting and normal compliance monitoring and enforcement. If this concept is adopted as state policy, the question of how PCA assesses permit fees also needs to be addressed.

PCA should investigate pollution-based fees.

Minnesota's fees were established with a relatively flat four tier cost structure for each class of permittee, primarily for administrative convienience. Since the fees are based on quantity of water discharged rather than what is in the effluent, the fees do not adequately reflect the amount of staff time spent on the facility. While it is probably not possible to have fees exactly reflect the staff time spent working on permits and enforcement, a fee system that has more than the current four tiers and that is based on the quantity and type of effluent could more closely match the fee to the cost of regulating the permittee. Wisconsin uses a fee system that calculates a fee based on the quantity and type of discharge, with more environmentally harmful substances assessed a higher fee.[32] In addition to more closely matching the cost of permitting and enforcement, such a system might also provide an economic incentive to reduce discharges of harmful substances. We recommend:

32 *Wisconsin Administrative Code*, Chapter NR 101.

- **PCA should modify its permit fee system to more closely match the cost of permitting and enforcement and better reflect the environmental hazards of the discharge.**

Another possibility to more closely match PCA staff effort and the fees charged would be to assess a surcharge on annual fees for permittees that have violations requiring enforcement actions.

Management Reporting and Control

The Water Quality Division does not currently have a system of time reporting that is adequate for management control purposes. The majority of staff simply report the number of hours worked in a day on their time sheets. Most public and private organizations use time reporting systems to ensure that staff work is closely tied to organizational goals, and so that management can assess the costs of meeting those goals and evaluate resource tradeoffs. We think that developing such a system would provide division and agency management valuable information on staff efficiency that will help them implement the most cost effective organization. We recommend:

- **The division should change its time reporting system to better track resource usage.**

This effort would be consistent with several other management reporting changes that we have suggested to improve the division's ability to evaluate its own progress in implementing environmental goals. It could also serve as a basis for documenting additional staff work associated with enforcement actions if an enforcement surcharge approach to permit fees is adopted.

SUMMARY

The Water Quality Division is undergoing a transition from a focus on bringing municipal facilities into initial compliance with Clean Water Act provisions to a program of continuing compliance and nonpoint source pollution reduction. We examined the division's activities and found a number of problems with the timeliness of PCA's permitting and enforcement actions. Although PCA has clearly made progress in bringing facilities into compliance, we believe the division can make further improvements. We recommend that:

- **The permitting process should be streamlined so that permits are issued more promptly.**

- **The division should consistently enforce the requirement for wastewater treatment plant operator certification. Some industrial plant operators should be required to be certified.**

- **The division needs to develop a system to systematically follow up on unsubmitted reports.**
- **The division needs to improve the process that it uses to track facility compliance.**
- **The division should formally set priorities for its permitting, inspection, and enforcement approach toward minor facilities.**
- **The Legislature should grant the division authority to issue administrative penalties.**
- **The division should investigate implementing a pollution-based permit fee system.**
- **The division should improve its time reporting system to better track resource use.**

GROUND WATER AND SOLID WASTE DIVISION

Chapter 4

PCA's Ground Water and Solid Waste Division administers two major programs: the permitting and regulation of solid waste landfills, and state and federal superfund programs to clean up improper hazardous waste disposals. The division also administers a waste tire abatement program, an infectious waste program, and several programs related to ground water monitoring and information.

In this chapter, we describe the programs of the Ground Water and Solid Waste Division. We ask the following research questions:

- **Are solid waste permits issued in a timely manner?**
- **Do sanitary landfills have adequate water quality monitoring systems and are water quality monitoring reports being submitted in a timely manner?**
- **Does PCA adequately enforce the terms of solid waste permits? Are facilities regularly inspected and does PCA take effective enforcement action when permit conditions or environmental rules are violated?**
- **Has PCA made progress in cleaning up contamination at superfund sites? Are cleanups efficient and comprehensive? Are resources adequate to address all contaminated sites?**

We addressed these questions by reviewing agency files on samples of 53 landfills and 17 superfund cleanup sites and interviewing division staff and representatives of the regulated community. In addition, we surveyed county solid waste officers and reviewed published comparisons of other states' programs.[1]

In general, we found that PCA takes too long to review permit applications and that the division's efforts to enforce compliance with permit terms and agency rules have been, over the years, mostly ineffective. The division has made significant progress cleaning up superfund sites, but the cleanup process is very lengthy and many sites have not yet been addressed.

---

1 We received survey responses from 77 of 87 counties (89 percent). Complete survey results are reported in Appendix B.

REGULATORY FRAMEWORK

When the Pollution Control Agency (PCA) was created in 1967, its duties were expanded from those of its predecessor, the Water Quality Control Commission, to include regulation of solid waste disposal.[2] Specific permitting authority was authorized in 1971 and PCA began to issue solid waste disposal permits with no expiration dates to new and existing facilities. Previously, some counties regulated solid waste disposal but many communities disposed of garbage in unregulated open dumps or by open burning.

PCA began issuing permits for solid waste facilities in 1971.

During the 1970s, evidence began to mount that the ground water under open dumps and sanitary landfills was susceptible to pollution. The federal Resource Conservation and Recovery Act of 1976 established an Office of Solid Waste in the Environmental Protection Agency (EPA) to provide technical and financial assistance to states on solid waste management, resource recovery and conservation.[3] This law requires states to prohibit open dumping of solid waste and requires all wastes to be disposed of in sanitary landfills or utilized for resource recovery.

A 1984 amendment to the Resource Conservation and Recovery Act required EPA to establish regulations for sanitary landfills. These regulations, not yet finalized, set minimum standards for landfill design and ground water monitoring. PCA has already adopted most of the requirements contained in the proposed federal regulations.[4] Unlike major programs for air quality, water quality, and hazardous waste where the state is delegated responsibility to carry out federal programs and policies, solid waste enforcement is mostly state funded and administered.

In 1982, PCA began to upgrade existing landfill permits. PCA required new facilities or expansions to have liners and leachate collection systems and embarked on an effort to upgrade water quality monitoring systems of existing landfills. In 1988, PCA completed a four-year effort to promulgate solid waste rules that incorporated many of the requirements that the division had included in 1980s permits.[5] The rules include design specifications for sanitary landfills, permit application procedures, operating and reporting requirements, water quality monitoring requirements, and provisions for closure and post-closure care. Beginning July 1, 1990, open sanitary landfills were required to submit financial assurance that would cover closure and post-closure costs, including a contingency for future cleanups of contaminated ground water.

PCA promulgated solid waste rules in 1988.

---

2 Statutory authorization is currently contained in *Minn. Stat.* Ch. 115 and 116. See especially *Minn. Stat.* 116.07.

3 *Public Law* 94-580 as amended by the Solid Waste Disposal Act Amendments of 1980, *Public Law* 96-482.

4 The only significant area where proposed federal regulations are more stringent than Minnesota's rules is the 30-year post-closure care and maintenance requirement for sanitary landfills. Minnesota rules currently require only 20 years of post-closure care.

5 *Minn. Rules*, Ch. 7001.0010-7001.0210, 7001.3000-7001.3550, 7035.0300-7035.2875.

Paralleling the increased concern with solid waste disposal was mounting evidence of soil and ground water pollution from past disposal of hazardous waste. To address these contaminated sites, the federal government in 1980 passed the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), which created a *superfund* financed by a tax on chemical feed stocks (oil) to clean up contaminated sites.[6]

In 1983, Minnesota passed its own superfund law, the Minnesota Environmental Response and Liability Act (MERLA), to pay for cleanups of sites that do not qualify for federal funds.[7] The state superfund is financed by general fund appropriations and a tax on hazardous waste generators. Both the state and federal superfund laws require parties responsible for the contamination to pay for the cleanup, with the fund paying for cleanups where responsibility cannot be determined or the responsible party is unable to pay. Federal funds also pay for a significant part of the division's expenses in administering the superfund program and for Minnesota's site assessment program that determines the extent of contamination at suspected sites. EPA oversees cleanups of sites eligible for federal funds, but has delegated management responsibility to Minnesota through a Superfund Memorandum of Agreement and site-specific cooperative agreements which set forth the division's responsibilities.

ORGANIZATION AND STAFFING

Figure 4.1 presents an organization chart for the Ground Water and Solid Waste Division. There are three sections in the division, each with an administrator's office and four operational units.

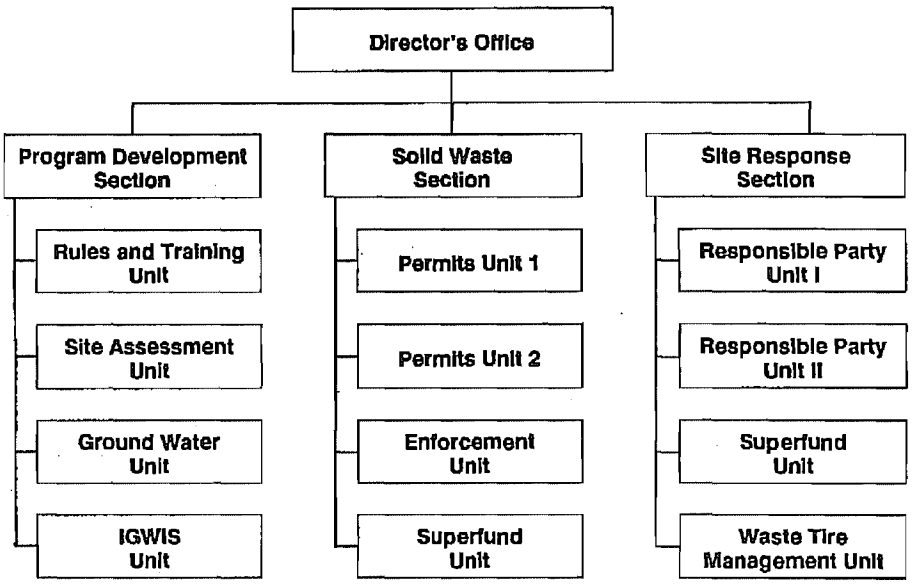
The Program Development Section has four units. The Rules and Training Unit is responsible for rules promulgation, research and assistance to other divisions and government agencies on solid waste issues, and training programs for division staff, landfill operators, and other solid waste professionals. The Ground Water Unit conducts special ground water studies, recommends ground water protection policy for the agency, and assembles data on ground water monitoring. The IGWIS unit designed and is now implementing the Integrated Ground Water Information System.

The Site Assessment Unit assesses 25 to 30 sites each year for possible addition to the state and federal superfund lists. This unit also responds to requests by individuals and businesses to evaluate the environmental history of property that is being sold (the Property Transfer Program). The number of these requests has grown from 44 in fiscal year 1986 to 1,692 in 1990. The parties making the requests pay for the costs of the property transfer investigations. Sometimes, PCA uses this program to get responsible parties to clean up sites with limited contamination, thereby avoiding a time-consuming superfund investigation.

6 *Public Law* 96-510, 1980, re-authorized and amended by Public Law 99-499, the Superfund Amendments and Reauthorization Act of 1986.

7 *Minn. Stat.* Ch. 115B.

Figure 4.1: Ground Water and Solid Waste Division Organization Chart, October 1990



The Site Response Section oversees most superfund cleanups. As of October 1990, there were 166 sites on the state superfund list called the Permanent List of Priorities.[8] Forty-four of those sites are also on the federal superfund list called the National Priorities List. The Site Response Section has two Responsible Party Units that oversee cleanups paid for and managed by the parties responsible for the contamination and a Superfund Unit that manages cleanups paid by state or federal superfund money where there is no responsible party.

The Site Response Section also contains the Waste Tire Management Unit. It licenses waste tire haulers and issues permits to waste tire transfer stations, storage facilities, and processors. It also administers a waste tire abatement program. Since its initiation in 1985, this program, funded by a fee on motor vehicle transfers, has cleaned up 20 tire dumps containing 3.2 million tires.[9] The division hopes to have all the unpermitted waste tire dumps cleaned up by 1995 and reassign some of the program's staff.

The Solid Waste Section contains two Permit Units that issue new permits and modify and renew old permits for solid waste disposal facilities (primarily landfills). The Superfund Unit oversees cleanups of landfills that are on the state and federal superfund lists. The Enforcement Unit has several functions: superfund cleanups, management of PCA's new infectious waste program,

8 In December 1990, the PCA Board added 14 more sites.

9 Most waste tires are used as a fuel supplement in coal burners. Some tires are ground up into small pieces called crumb rubber for use in asphalt and the manufacture of plastic containers.

landfill inspections, and enforcing compliance with permit terms, state laws, and solid waste rules.

As a result of legislative initiatives such as the superfund and waste tire programs, PCA's Ground Water and Solid Waste Division devotes more resources to clean up environmental contamination than to enforce existing solid waste permits and rules. Forty percent of division staff are involved in superfund cleanups but only six percent are directly involved with enforcement activities. Figure 4.2 describes in detail the responsibilities of the division's staff for each section. As we discussed in Chapter 1, PCA's allocation of its resources is largely fund driven. In this case, there is a federal program to fund cleanups and a mechanism to get responsible parties to pay for a substantial portion of cleanup costs. In contrast, solid waste enforcement efforts are funded by state general fund appropriations. This relative imbalance in the emphasis placed on cleanup versus enforcement has implications for PCA's effectiveness in these two important functions.

Figure 4.2: Ground Water and Solid Waste Division Staffing

1	Division Director
1	Assistant Division Director
1	Executive Assistant
1	Grants Program Coordinator
1	Quality Assurance/Quality Control Coordinator
16	Clerical staff (includes 3 supervisors)
5	Regional Staff

Program Development Section

1	Program Administrator
1	Supervisor of Rules and Training Unit (supervises 13 staff who draft rules, operate training programs, and prepare special reports)
2	Staff primarily responsible for drafting and revising financial assurance rules, evaluating their effectiveness, and dealing with other financial issues
2	Staff working on solid waste management, recycling and waste packaging issues
2	Staff working on division training programs and landfill operator certification
2	Engineers working on incinerator ash rules and an ash utilization study
4	Unclassified staff working on a waste composition study
1	Staff working on composting rules, and reports on waste packaging and waste composition
1	Supervisor of Site Assessment Unit (supervises 8 staff doing site assessments and 4 staff in the property transfer program)
8	Staff (includes 3 hydrologists) who do preliminary assessments of potential contamination sites to determine their eligibility for the state and federal superfund programs
4	Staff who respond to requests to evaluate sites involved in property transfers
1	Supervisor of Ground Water Unit (supervises 9 full-time and 2 part-time staff involved in various aspects of ground water study and monitoring)

Figure 4.2, continued

1	Staff who coordinates with EPA and with EQB's Water Resources Committee on local water management issues
1	Staff working on a study on exchangeability of ground water data among different agencies
2	Staff working on updating ground water non-degradation rule
1	Staff working on ground water susceptibility study and wellhead protection
1	Staff working on underground injection control program and ground water monitoring aspects of Water Quality Division programs
1	Staff working on updating risk assessment methods
3	Staff working on project to catologue existing ground water monitoring programs
5.5	Staff working on the Integrated Ground Water Information System

Solid Waste Section

1	Program administrator
2	Supervisors who each supervise 7 staff responsible for solid waste disposal permits
1	Supervisor who oversees 15 staff involved primarily in enforcement of landfill permits and solid waste regulations
1	Supervisor who oversees 10 staff involved primarily with landfills on the Superfund list
6	Engineers who work on issuing solid waste disposal permits
4	Hydrologists who work on ground water monitoring at landfills
6	Staff who inspect landfills and ensure compliance with permit terms and solid waste rules
1	Engineer who works on enforcement of solid waste rules and permit requirements
16	Staff (including 3 engineers and 3 hydrologists) who oversee cleanups of landfills on the state Superfund list
3	Hydrologists who deal with technical aspects of landfill permits, enforcement actions and superfund cleanups
3	Staff who regulate the transporting, packaging, labeling, disposal and treatment of infectious waste

Site Response Section

1	Program administrator
3	Supervisors who manage staff responsible for cleanups under the state and federal Superfund programs
1	Supervisor of the waste tire program who oversees 10 staff who administer the waste tire program
4	Staff (includes 2 hydrologists) who work on site investigation aspects of the property transfer program
35	Staff (including 11 hydrologists, one engineer, one soil scientist, one grants analyst) who oversee state and federal superfund cleanups.
4	Staff who issue permits to waste tire storage facilities, transporters, and processors
6	Staff who work on the waste tire abatement program to clean up existing waste tire dumps
168.5	TOTAL STAFF

Note: Staffing as of October 1990.

As we discussed in Chapter 1, most of the growth in Ground Water and Solid Waste Division staff since 1987 involved new division responsibilities, such as the waste tire program, the property transfer program, and the development of the ground water information system. Basic regulatory functions received only modest staff increases. Two enforcement and five permit staff were added to the Solid Waste Section and three professional staff were added to the Site Response Section to bolster ongoing programs.

During discussions with PCA and county staff, we heard particular concerns about staff turnover in the Ground Water and Solid Waste Division. Table 4.1 shows the percent of key staff and project managers in permitting, enforcement, and superfund units in 1987, 1988, and 1989 who held the same position the following year and the percentage of 1987 staff who held the same position for three years. For each of the first two years shown, about three-fourths of the professional staff remained in the same position. But, turnover increased between 1989 and 1990. Fewer than half of the engineers and hydrologists in 1989 were in the same position in 1990. Most 1987 staff were no longer in the same positions three years later.

Turnover was greatest between 1989 and 1990.

Table 4.1: Professional Staff Turnover in the Ground Water and Solid Waste Division, 1987-90

	Percent of Staff Occupying the Same Position Between the Years Shown			
Position	1987-88	1988-89	1989-90	1987-90
Engineers	83%	71%	37%	33%
Hydrologists	79	79	35	16
Project managers	80	75	67	40
Supervisors	67	83	50	17

NOTE: Excludes clerical staff and pollution control specialists. Also excludes staff from the Program Development Section and the Waste Tires Unit.

Our review of case files, our interviews with PCA staff and members of the regulated community, and the survey responses of county solid waste officers all indicate that:

- **The division's high staff turnover has impeded its ability to issue permits in a timely manner, follow through on enforcement efforts, and quickly clean up superfund sites.**

In our survey of county solid waste officers, 30 percent of respondents said that less staff turnover is the most important change they would like to see in PCA's Ground Water and Solid Waste Division.[10] Industry representatives and consultants also told us that staff turnover is a problem. One industry rep-

10 For example, one county's solid waste officer said, "The single most evident factor related to problems we have had with PCA has been staff turnover. They seem to be constantly training new staff. Files are carried over for new staff who do not know what to do yet and simply sit on them. The same is true when we ask for technical assistance.... Very few staff seem to stay in one position long enough to become expert resource persons."

resentative commented that he has dealt with six different project leaders and eight hydrologists on his company's cleanup of a superfund site.

Some PCA managers claim that it is difficult to retain highly skilled technical staff because they are attracted to higher paying positions with consulting firms and private industry. However, as shown in Table 4.2, we found that only 20 percent of the professional staff who left their positions during fiscal year 1990 went to the private sector. Evidence not presented in the table indicates that about half of the moves within PCA and other state agencies were promotions and half were lateral transfers. Moreover, division managers told us that they prefer to fill vacancies from within, either through promotions or lateral transfers. While this policy may have benefits, the division has not articulated a policy to address the problems caused by rapid staff turnover. As a result, many responsibilities are not met until a new person can be recruited and trained. We recommend that:

Staff who leave usually go to other positions in PCA or other government agencies.

- **The division should develop a plan to reduce and manage the effects of staff turnover.**

Table 4.2: Subsequent Location of Division Professional Staff Who Left Their Position in FY 1990

Position	Stayed in GW&SW	Other PCA Division	Other State Agency	Other Public Sector	Private Sector
Supervisors	1	3	1	–	–
Project leaders	1	2	1	–	2
Engineers	–	–	–	1	2
Hydrologists	2	3	6	1	3
Specialists	2	4	8	–	2
All Staff	6 (13%)	12 (27%)	16 (36%)	2 (4%)	9 (20%)

For example, PCA could require staff moving to other positions in the agency to split their time between their old and new positions until their replacements can be hired, trained and brought up to date. Another possibility would be to have supervisors assume direct responsibility for the departing staff member's caseload until the position is filled. Division managers say they do this, but that if supervisors spent all their time managing cases, they would have no time left for supervising. Also, better management information systems, a topic we discuss later in the chapter, would make it easier for new staff to familiarize themselves with cases. The division is aware of its turnover problem and it formed a committee in March 1990 to address staff concerns that result in turnover.

MINNESOTA'S GROUND WATER QUALITY

Information on Minnesota's ground water quality is limited. The Ground Water and Solid Waste Division has administered an ambient water quality monitoring program since 1979. This program has collected approximately 1,100 samples from 486 monitoring stations around the state, testing for contamination from bacteria, nitrates, metals, and volatile organic chemicals (VOCs). The division has recently suspended the ambient monitoring program because of a lack of funding. It obtained an LCMR grant to review and redesign the ambient monitoring program and will request permission from the Legislature to re-allocate funds for the program.

There were few sampling points in the ambient program compared to Minnesota's vast ground water resources and sampling was relatively infrequent, so it is has been difficult to draw conclusions about water quality trends. The results from the ambient monitoring program, special studies, monitoring done by other agencies, and regulatory monitoring allow some general observations about Minnesota's ground water quality.

Minnesota's ground water quality is generally good.

Minnesota's ground water quality is generally good, although the division has noted some problems. Ambient monitoring between 1983 and 1987 found detectable amounts of VOCs in 41 of 387 sites (11 percent). These sites were not concentrated in any part of the state and VOCs exceeded drinking water standards at only two of the sites. Nitrates, found in fertilizers, septic tanks, and animal wastes exceeded drinking water standards in seven percent of the samples taken. Iron and manganese were high at many sites but these are naturally occurring substances that only affect aesthetic qualities of water and pose no health risk. Recent studies have also found low levels of pesticides in farming area wells.[11]

Approximately 75 percent of Minnesotans rely on ground water for their drinking water. In order to protect ground water quality, the 1989 Legislature enacted the Ground Water Protection Act.[12] This act sets a state non-degradation policy for ground water and enhances PCA's ability to minimize ground water contamination.[13] It also calls for improved water quality monitoring and information management, development of health risk limits, and increased regulation of pesticides and fertilizers. The Ground Water Protection Act may provide a basis for PCA to set stricter standards for solid waste permits and superfund cleanups. The exact implications depend on how PCA implements the non-degradation policy.

---

11 Gretchen Sabel and Eric Porcher, *Ground Water Quality Monitoring Program: An Appraisal of Minnesota's Ground Water Quality,* (St. Paul: Minnesota Pollution Control Agency, 1987); Minnesota Environmental Quality Board, *Minnesota Ground Water Protection Strategy* (St. Paul, 1988); Minnesota Pollution Control Agency, *Minnesota Water Quality: Water Years 1988-1989* (St. Paul, 1990) 37-50.

12 *Laws of Minnesota*, 1989, Ch. 326.

13 Minnesota's ground water usually is of higher quality than drinking water standards. Current rules are ambiguous and have been interpreted in some cases as permitting contamination up to drinking water standards. (*Minn. Rules*, Ch. 7050.0220, 7060.0600.)

LANDFILL REGULATION

There are 373 permitted solid waste management facilities in Minnesota.

There are 373 permitted solid waste management facilities in Minnesota. Of these, 218 were open (i.e., still collecting waste) and 155 were closed as of December 1990. Table 4.3 summarizes the types and status (open or closed) of Minnesota's landfills. The table does not include smaller landfills, yard waste compost facilities, and transfer stations that merely have to inform PCA of their existence and their commitment to abide by agency rules (called *permit by rule* facilities).[14]

Table 4.3 shows that there are 53 open and 80 closed *sanitary landfills*. Sanitary landfills receive the garbage that is routinely picked up by garbage haulers. Hazardous wastes are not allowed in Minnesota's sanitary landfills, but many households routinely dispose of products that contain chemicals with toxic qualities and these end up in sanitary landfills. In addition, people have illegally dumped hazardous wastes directly at landfills. As a result, most sanitary landfills contain hazardous substances which have a potential for polluting the soil and ground water.

Table 4.3: Type and Status of Permitted Solid Waste Management Facilities in Minnesota, December 1990

Type of Facility	Number Open	Number Closed
Sanitary	53	80
Demolition	73	28
Industrial	21	18
Transfer Station	44	7
Resource Recovery	15	8
Modified	1	10
Ash	10	4
Slag Utilization	1	0
TOTAL	218	155

Source: Pollution Control Agency, Ground Water and Solid Waste Division.

Industrial landfills handle non-hazardous waste from industrial production facilities. *Demolition landfills* receive demolition debris and usually pose less of a pollution risk than sanitary landfills. *Transfer stations* are temporary storage areas for garbage until it can be transported to a landfill or other facility. *Resource recovery* facilities process solid waste, removing recyclable material and preparing the waste for burning. Materials that cannot be recycled may be composted, burned, or processed as refuse derived fuel. *Modified landfills* are sanitary landfills in Northern Minnesota that were issued less restrictive permits because the cold winters made it difficult to comply with some of the normal permit requirements. Only one of the 11 facilities issued modified

14 Permit by rule facilities include transfer stations under 30 cubic yards capacity, demolition landfills smaller than 15,000 cubic yards capacity, compost facilities receiving only yard waste, recycling facilities, and some special industrial waste storage facilities. These permits are processed by PCA's regional offices.

permits remains open. *Ash landfills* receive non-hazardous incinerator ash from industrial or municipal waste incineration. The *slag utilization* permit allows the material that settles on the bottom of coal burners to be used in pavement and parking lot construction.

The earliest landfill permits did not require adequate water quality monitoring and had no expiration dates.

PCA began issuing permits to sanitary landfills in 1971. The early permits (now called *perpetual permits*) did not have expiration dates. Perpetual permits did not require the extensive investigations and water quality monitoring systems that characterize today's permits, although permit plans usually required a few monitoring wells. In 1983, PCA began a program to upgrade its earlier perpetual permits by issuing five-year permits. Five-year permits were also issued for new facilities or those proposing major expansions or modifications. These new permits required more information about the landfill site, better water quality monitoring plans, and plans for landfill closure and post-closure care. In 1988, PCA incorporated these requirements into its solid waste rules.[15]

The most comprehensive permit requirements apply to sanitary landfills and are intended to keep rain and snow from penetrating through the waste to the ground water below. Toxic chemicals attach or leach onto water percolating through the waste. Pollution occurs when this *leachate* reaches the ground water. Natural geologic conditions, such as the composition of the soil and bedrock, influence this process. But pollution can be prevented or significantly reduced by proper landfill design. Daily compaction of the garbage, besides saving landfill space, reduces the penetration of precipitation. Daily cover and grading of the landfill with soil directs rain and snow melt away from the garbage pile. Landfill liners and leachate collection and treatment systems protect the ground water from leachate that penetrates the waste.

Solid waste rules describe liner and cover requirements as well as other pollution control safeguards. The documents required as part of the permit application procedure are designed to assure PCA that the landfill will meet design and operational requirements and address any specific concerns caused by the site's geologic characteristics. They also provide for a water quality monitoring plan to detect any pollution that occurs in spite of the safeguards. The major documents required as part of the permit application are:

- a general description of the facility including a topographic map, and a description of the types of waste to be handled and the equipment to be used;
- an engineering report describing the proposed design, construction, operation and maintenance of the facility;
- a study of the hydrogeologic conditions at the landfill site;
- an operations manual and a description of the facility's security procedures;

15 *Minn. Rules* Ch. 7001.3000 - 7001.3475, 7035.2815.

- a description of how the permittee will inspect the facility, including the liner and cover system;
- a quality control/quality assurance plan describing water quality sampling and testing procedures;
- a gas monitoring collection and treatment system; and,
- a closure and post-closure plan including a description of the final cover and a description of post-closure inspection, maintenance and water quality monitoring.[16]

Facilities must also submit financial assurance in one of several forms prescribed by rule to cover the cost of closing the landfill, post closure maintenance and care, and possible future pollution cleanups.[17] The most common types of financial assurance are the establishment of a trust fund and the submittal of a letter of credit.

Timeliness of Permit Review

Many county and industry representatives we talked with complained about the length of time it takes to get a permit. They complained that applications sit on the desks of PCA staff for months with no action. Our survey of county solid waste officers indicated that:

- **Only 18 percent of the solid waste officers rated the timeliness of the division's permit staff as "good" or "excellent." Twenty-five percent rated the staff "fair" and 55 percent rated them "poor."**[18]

Most counties feel that PCA takes too long to issue permits.

Thirty-nine percent of respondents said that permit delays have caused their counties financial hardship.[19] One officer said that two privately owned landfills had submitted revised operation plans to PCA in June and October 1989. As of September 1990, PCA had not approved either plan. In fact, one of the requests had not even been given a preliminary review. This delay was of particular concern because the site was to have a retention basin constructed to control surface water runoff.

16 *Minn. Rules*, Ch. 7001.3300, 7001.3475, 7035.2815.

17 *Minn. Rules.*, Ch. 7035.2665-7035.2805.

18 Two percent did not respond.

19 The following comments illustrate permit applicants' frustration:

"Counties are required to submit various reports to the MPCA in a timely manner, yet the MPCA does not respond to the submitted reports. A county does not know whether to proceed according to the unapproved plan and risk starting over at a later date, or wait until the plan is approved at a later date, risking penalties...for not initiating the provisions of the plan by the MPCA-established deadline."

"The permit procedure is PCA's tool for enforcement. Therefore, it is imperative that the permit be processed in a timely fashion. I think that if all the information is at the PCA, a permit should be issued within six months."

"PCA staff...continually ask for more and more information and continue to say, 'we have more pressing matters to deal with—we will get to yours next week.' "

An industry representative complained about delays in getting PCA's comments on its request for a landfill expansion. The company wanted to start drilling monitoring wells before the ground froze and was concerned that delays would add cost to the project.

Based on survey responses, correspondence we received, and interviews, we concluded that the regulated community is frustrated by the amount of time it takes PCA to review and respond to permit applications and other required submittals. While concern with PCA's timeliness is evident, it is more difficult to assess whether the concerns are justified.

We reviewed PCA files to determine how long it took to respond to permit applications. We found that in the 1970s, permits were issued within a few months of application. However, the perpetual permits of the 1970s did not have the extensive requirements of today's permits and their issuance was routine. When PCA upgraded some of the perpetual permits to five-year renewable permits in the mid-1980s, it issued the permits first and required the permittee to submit reports as a condition of the permit. In a strict sense, then, the permit was issued quickly, but assuring compliance with state requirements was much more time-consuming.

In our review of landfill files, we attempted to discern whether the division responded to required reports in a timely manner. This turned out to be a difficult task because many of the files were incomplete. However, in general, we found that:

- **The division usually responded to required reports within one to three months.**[20]

PCA often required permittees to revise inadequate or incomplete reports. Thus, during the 1980s, the permitting process was more likely to be extended by disagreements over the content of reports and the methodology used to conduct studies than by PCA's failure to respond at all.

We asked division managers and supervisors about delays in issuing permits in recent years. They acknowledged that not all permit requests are promptly reviewed. They attributed this to a shortage of enough engineers and hydrologists to review all of the studies and reports submitted with permit applications. The Legislature appropriated three additional permitting engineers in 1989 to the Solid Waste Section. These positions were filled in 1990. Managers told us that the additional engineers will reduce the backlog of permit applications but that it still may take up to a year for an engineer to get to and review a newly submitted proposal. In addition, the division now has to deal with closure requirements for the 35 sanitary landfills that closed since the new solid waste rules were adopted.

Division managers also pointed out that while the number of new solid waste permits issued has remained constant over the last ten years (13 in 1980, 15 in

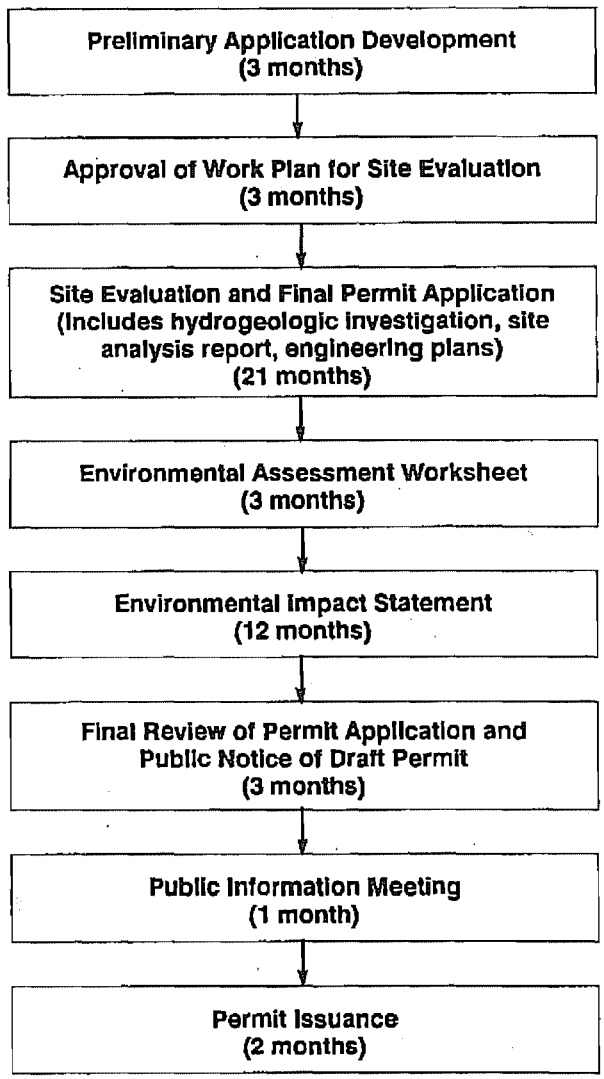
20 We found many instances where required reports were not submitted or were submitted late. We discuss this problem later in this chapter.

1990), the permit process itself has become more complex, requiring many more studies and technical requirements than in years past. The division has established an internal committee to examine ways to streamline its permit review procedures and to establish priorities for addressing projects.

It takes three to four years to obtain a landfill permit.

Figure 4.3 outlines the steps required to get a permit for a new sanitary landfill or for a major expansion of an existing landfill. It suggests a four-year process from the preliminary application to the final approval, although small projects that do not require an environmental impact statement may be completed in three years. The process can be delayed by public opposition to landfill proposals, which may result in contested case hearings or appeals of PCA Board decisions.

Figure 4.3: Landfill Permit Process



We think that the division should reduce the time required to issue landfill permits. Division supervisors told us that they place no formal requirements on their staff to complete permit reviews within a certain time frame. Staff do not have work plans delineating what they have to accomplish each month.

The division should strike a better balance between thorough permit application reviews and getting things done. We recommend that:

- **The division should develop appropriate time frames for its staff to complete routine activities.**

- **The division should continue efforts to develop a formal policy as to which projects get priority when resources are not sufficient to meet the work load.**[21]

- **Staff should have individual work plans based on these time frames and priorities and their performance should be evaluated on the basis of timeliness and quality.**

- **The division should keep track of all permit applications and requests for technical assistance and report to the PCA Board on the amount of time it takes to respond.**

Relations With the Regulated Community

In our survey of county solid waste officers, we asked respondents to rate the division's permit staff in terms of their technical competence and ability to answer questions. Forty-eight percent of respondents said the permit staff's technical competence was good or excellent, 32 percent rated the staff's competence as fair, and six percent said it was poor. Forty-four percent of respondents rated the staff's ability to provide answers to questions as good or excellent, 36 percent said fair, and 16 percent said poor.[22]

We also found that:

- **County solid waste officers believe the division does not provide adequate direction about how to prepare permit applications and the studies that accompany them.**

---

21 Division managers have recently drafted a policy that assigns different priorities to different types of facilities. Division managers plan to determine staff assignments and time commitments based on this new policy.

22 The totals are less than 100 percent because some respondents had no opinion or did not answer.

Many county solid waste officers are dissatisfied with PCA's performance.

County solid waste officers feel that they design facilities based on their understanding of PCA's requirements, only to have division staff tell them that the designs are unacceptable. Forty-seven percent of the solid waste officers said that PCA does not clearly specify the information it needs from permit applicants.[23] Sixty-six percent of respondents did not think that PCA's solid waste rules provide a predictable basis for making pollution control investments. While we cannot independently verify the merit of county officials' complaints about the competence and helpfulness of the division's permit staff, we think the fact that a high percentage of county officers are dissatisfied is in itself a problem that PCA needs to address.

The division's managers and supervisors told us that they do not see the division's role as one of designing landfills but rather to make sure that designs conform to solid waste rules. There is a large consulting industry that specializes in solid waste system design. The division says that its staff tries to respond to questions about whether a design will meet requirements and what problems are likely to be encountered. The division has also, over the years, held many training sessions on the new solid waste rules and has sessions at the annual waste seminar each February. It has periodically prepared manuals on selected solid waste topics and has recently compiled a new manual encompassing all aspects of landfill permit and operational requirements.[24]

While county solid waste officers believe that they do not get adequate advice on which facility designs and technologies will be approved, they also feel that PCA staff can be arbitrary in disapproving county plans, often dictating which technologies are acceptable and refusing to consider local needs and circumstances. Fifty-seven percent of the solid waste officers said that the division is not flexible enough when regulating the type of pollution control technology that counties can use. Seventy-seven percent felt their county could reduce costs if given more choice about the pollution control equipment used.

Finally, some county solid waste officers feel that permit staff from the central office exhibit a condescending attitude toward county officials.[25] Division managers acknowledge that some staff need to improve their communications skills and be more diplomatic in dealing with the regulated community. PCA recently required staff to attend customer relations training and the division may require additional training in the future.

We also found that most of the negative comments about the division are directed toward central office staff. Attitudes toward regional staff are much

---

23 For example, one solid waste officer commented, "PCA should advise and help counties with waste options. It seems the PCA requires us to present a plan that they then pick apart and deny." Another solid waste officer said, "The biggest problem I have is that the counties are not given recommendations or aided in making major decisions concerning waste management.... A prime example of this is in the treatment of landfill leachate. We are told by the agency to collect and treat it but they give no concrete answers as to the best way to accomplish this. They just leave it up to the county and high paid consultants to figure out options and then they tell you if it is approved or not."

24 Minnesota Pollution Control Agency, *Guidance Manual for Mixed Municipal Solid Waste Land Disposal Facility* (St. Paul, 1990).

25 One solid waste officer said, "MPCA has not only been extremely slow in responding to the draft documents, but very inflexible and almost condescending in their response." Another officer commented, "PCA treats us like the 'bad guys.' ...We are not trying to get away with something as some of the staff believe. PCA can maintain their regulatory role without being so antagonistic towards us."

Counties have more positive relationships with regional staff than with central office staff.

more favorable. Eighty-eight percent of the solid waste officers said they receive helpful advice from PCA's regional office on technical and procedural matters. Many commented on their positive relationship with the regional offices and willingness to turn to regional staff for technical assistance. Several respondents suggested that PCA should assign more staff and responsibilities to the regional offices.

Division managers acknowledge this and say they want the regional staff to be the division's contact point with the regulated community. If the regional staff need technical help, they get it from central office staff. The division intends to assign greater responsibility to the regions, including all landfill inspections outside the Twin Cities metropolitan area. But it does not want to significantly expand the regional offices or turn over major permitting responsibility to the regions.[26] The division believes that the regional staff's rapport with the regulated community would make them less effective regulators. Conversely, assigning regulatory responsibility to the regions might reduce their rapport with the regulated community. Division managers also think regional staff might apply rules inconsistently.

Not all members of the regulated community expressed concern with the Ground Water and Solid Waste Division. Some felt that division staff work hard and do not compromise their mission to protect the environment.[27]

We believe there are some measures that the division could take to address the concerns of county solid waste officers and other critics. In our view, regardless of the merits of those concerns, the division could improve its relationship with counties and other regulated entities. Accordingly, we suggest that:

PCA needs to improve its relationship with counties and other regulated entities.

- **The division should institute an ongoing forum with representatives from the division, counties, industry, and consulting firms to try to resolve areas of dispute between PCA and regulated groups.**[28]

This process should include the Office of Waste Management, which oversees solid waste planning. In addition, the division should continue to offer programs to explain permit procedures to regulated entities. Quarterly workshops in each region are one possibility.

Sometimes PCA and those they regulate disagree about technical matters, such as the feasibility of a proposed leachate collection system or the adequacy of a proposed water quality monitoring system. These differences often

---

26 The regions currently administer demolition landfill and transfer station permits and issue permits-by-rule.

27 One solid waste officer commented, "I have found the staff to be direct and consistent in their permit review and inspections made in my county regarding solid waste management facilities.... I find PCA staff to be dedicated and technically above many consultants trying to provide services in the county." Another respondent said, "They have a job to do and are doing it well. The biggest problem I've seen is that some county officials like to make trouble and complain. If they would cooperate, things would go as smoothly as they have for me."

28 Division managers say that they tried to meet with counties in the past to discuss issues but that few county officials attended and little was accomplished. A Consulting Engineers' Council meets several times a year to exchange information.

extend the permitting process. Occasionally, the PCA Board gets involved, requiring considerable staff time. We suggest that:

- **PCA should explore alternative methods such as mediation and arbitration to settle disputes over technical issues.**

For example, PCA and representatives from the regulated community could select a pool of impartial experts to resolve technical disputes without violating solid waste rules. When a dispute arises, an arbitrator could be randomly selected from the pool to decide the issue. This would prevent the permitting process from becoming too drawn out.

The Scope of Permit Review

Many members of the regulated community expressed concern over the scope of PCA's review. They believe that PCA staff is making decisions about whether a landfill is needed, where it should be located, and how it should be designed. In the opinion of county officials, this is essentially a planning decision and should be left up to the counties.

State law requires each county to have a solid waste management plan.[29] It requires the Metropolitan Council to approve plans in the seven-county metropolitan area and the Office of Waste Management to approve plans for the rest of the state.[30] In addition, the law assigns general solid waste planning and financial assistance responsibility to the Office of Waste Management.[31]

Division managers and supervisors believe that the public demands that the agency do more than simply enforce permit requirements and agency solid waste rules. For whatever reasons, the public often does not become involved in the the solid waste management planning process until an actual facility is proposed. By then, the public's only recourse is to convince the PCA Board that the project should not proceed.

In Chapter 6, we discuss a recent Attorney General's opinion that suggests that PCA should base permitting decisions on broad environmental grounds, not just compliance with state rules. Under this opinion, division staff will have to consider whether a facility should be built and, if so, what type of facility would be most protective of the environment. Permit reviews, therefore, will take even longer than they do now.

PCA could be more effective if it focused on compliance rather than facility planning.

In general, we think that PCA could be a more effective regulator if it focused on compliance rather than facility planning decisions. Limiting PCA's role to enforcement would reduce friction between PCA and counties. More important, restricting the agency's role would give division staff more time to devote to permitting and enforcement responsibilities. A lot of time is spent debating the merits of new facilities but, as we discuss in the next two sections,

29 *Minn. Stat.* 115A.46.

30 *Minn. Stat.* 115A.42.

31 *Minn. Stat.* 115A.072, 115A.49-115A.55.

many of the requirements of existing facilities are not being adequately enforced.

Current Permit Status

Sanitary landfill permits issued in the 1970s had no expiration date and were valid until the facility reached its permitted capacity. Beginning in 1978, the Ground Water and Solid Waste Division stopped issuing perpetual permits and began issuing five-year renewable permits. In 1982, the division launched an effort to re-permit facilities still operating under perpetual permits with renewable five-year permits. One of the goals of this effort was to upgrade the water quality monitoring systems of the older landfills. Most of the older facilities had only two to four monitoring wells that were not appropriately placed. The new permits required hydrogeologic studies to determine the optimum placement of new monitoring wells, a new monitoring protocol, and quality assurance and quality control plans.[32]

The effort to upgrade permits was time-consuming and overwhelmed division staff. As a result, the division abandoned this effort in 1986. Our review of permit files confirms that the division had great difficulty implementing its 1982 upgrade strategy. In fact,

- **As of August 1990, 22 of the 53 open sanitary landfills (42 percent) were still operating with perpetual permits.**

Most sanitary landfills still do not have adequate water quality monitoring systems and some do not monitor ground water quality at all.

The five-year permits included schedules for bringing landfills' water quality monitoring systems up to current standards. However, the process of receiving and reviewing the required hydrogeologic and engineering reports took years. In some instances, the five years expired and the facility still had not completed all of its requirements. The division has been allowing facilities to operate on expired permits so long as they are in substantial compliance with the new solid waste rules. The division hopes to close down those facilities not in compliance with the new rules as well as landfills still operating under perpetual permits without adequate water quality monitoring systems.

We found it difficult to determine how many of the open sanitary landfill sites have adequate water quality monitoring systems because there is no centralized information system with this information. In response to our requests, division supervisors surveyed their hydrologists. They reported that of 53 open sanitary landfills, 24 have ground water monitoring systems that comply with agency rules, 25 have inadequate monitoring systems, and four do not monitor ground water at all. Of 80 closed sanitary landfills, 17 have ground water monitoring systems that comply with agency rules, 33 have inadequate monitoring systems, and 30 do not monitor ground water quality at all.[33]

---

32 In general, wells should be located upgradient and downgradient from the landfill so the effect of the landfill on water quality can be determined. This requires a hydrogeologic study to determine the direction of ground water flow and other relevant conditions that could influence the likelihood and extent of pollution.

33 Thirty-five of the 80 closed sanitary landfills closed after the agency's solid waste rules were adopted in November 1988. Ten of them have monitoring systems that comply with the rules, 18 have inadequate monitoring systems, and seven do not monitor ground water at all.

The agency's 1988 solid waste rules required landfills to submit a plan for closure and post-closure care and to make arrangements to meet long-term care and possible cleanup costs for twenty years beyond closure. This financial assurance was originally required by November 15, 1989. In 1989, however, the Legislature exempted all facilities that closed by June 30, 1990 from the financial assurance requirement. As a result of this exemption, 35 landfills nearing capacity and not wishing to commit to this financial obligation closed before the end of June 1990.

All 53 open sanitary landfills have complied with the financial assurance requirements. The rules allow several forms of financial assurance but the two most commonly used are trust funds and letters of credit. Trust funds set aside cash reserves that can be used only to pay for future closure and cleanup costs. Letters of credit are commitments from banks to extend credit when funds for closure and cleanup are required.[34]

A portion of the financial assurance covers the cost of future cleanups of ground water contamination from landfills. The division estimates that most landfills will qualify for the state superfund list and the financial assurance funds will reduce reliance on the superfund to fund cleanups. However, closed landfills were not required to provide financial assurance and some open landfills nearing capacity will not accumulate sufficient funds to fulfill their obligations before they close. Thus, financial assurance will not be adequate to meet the cost of cleaning up landfill contamination and additional funding sources will be required. We suggest some options later in this chapter.

Over the last two decades, there were significant reductions in the number of potentially polluting waste facilities in Minnesota. In 1970, there were approximately 1,500 open dumps and no permitted sanitary landfills. By the early 1980s, most of the dumps were closed and there were 140 unlined permitted sanitary landfills. Today, there are 12 incinerators, 43 unlined sanitary landfills, and 14 sanitary and industrial landfills with liners. The safeguards contained in new permits considerably reduce the risks posed by new landfills to ground water contamination.

Counties are turning to alternatives other than landfills to manage solid waste.

Concerns over ground water contamination at existing landfills have made it politically difficult for local officials to approve new sanitary landfills. The costs of obtaining permits and designing landfills to meet solid waste rules are much higher than they used to be. This has deterred private investment in solid waste management and has resulted in counties taking over operation of some privately owned landfills. There has been only one new sanitary landfill permit issued since 1989.

State law requires counties to reduce dependence on sanitary landfills to manage waste.[35] As existing landfills reach capacity, many will be replaced with

34 PCA is also requiring financial assurance for large industrial, demolition and ash landfills on a permit-by-permit basis and plans to include financial assurance requirements in new industrial waste rules when they are promulgated.

35 *Minn. Stat.* 115A.02. State law also says that no new waste disposal facility may be permitted if there are feasible and prudent alternatives, including waste reduction, source separation and resource recovery (*Minn. Stat.* 115A.917, 116D.04).

composting facilities, recycling, and other forms of resource recovery. Incineration was the preferred alternative of the 1980s, but public concerns about emissions have reduced the likelihood of future incinerator construction. There will continue to be a need for some landfills for garbage that cannot be handled by alternative means, and for incinerator ash. However, division managers believe that within 10 years, there will probably only be about 30 regional sanitary landfills in Minnesota.

Enforcement

The Ground Water and Solid Waste Division has other regulatory responsibilities in addition to issuing permits. It ensures that landfills submit water quality monitoring reports in a timely manner and it inspects landfills to ensure that they comply with permit requirements and solid waste rules.

In our review of 27 sanitary landfill files, we found many instances of facilities failing to submit required water quality monitoring reports.[36] Because the division only keeps the most recent two years of water quality monitoring reports in its files, we could not determine the number of reports that were sent in late or not at all. However, by reviewing file correspondence, we found that:

- **PCA notified 22 of the 27 sanitary landfills in our sample at least once that their water quality monitoring reports were delinquent.**

We also reviewed the division's ground water report tracking log to determine whether or not sanitary landfills have been submitting quarterly water quality monitoring reports in a timely manner. Landfill operators are required to submit spring and summer water quality monitoring reports by June 30 and September 30, respectively. We found that:

- **As of October 4, 1990, 56 of 133 (42 percent) open and closed sanitary landfills listed on the log had submitted the spring quarterly monitoring report and 30 (23 percent) had submitted the summer report. Only 25 landfills (19 percent) had submitted both required reports and 72 (54 percent) had not submitted either report.**

Many landfills have not submitted 1990 water quality monitoring reports.

This does not mean that the landfills have not conducted the water quality sampling. Sometimes laboratories are slow sending in monitoring results and sometimes facilities wait until the end of the year to send in the results, contrary to the requirements of their permits.[37] Clearly, however, the division has had a problem obtaining required water quality monitoring reports when they are due.

---

36 We selected files randomly, giving greater weight to open and recently closed landfills. Our sample contained 16 open and 11 closed facilities. Five of the open facilities had perpetual permits.

37 We also had difficulty tracking down the monitoring reports that were sent in. Some were in a secretary's intake pile, some were on hydrologists' desks, and some were in the central files.

We also found that:

- **The division does not act promptly and effectively to enforce reporting requirements.**

As a rule, enforcement actions are not taken if reports are late. In fact, even after repeated violations, PCA rarely takes meaningful enforcement actions for delinquent reports. The following examples from the landfill files we reviewed show how some facilities repeatedly failed to submit reports with little consequence:

Landfills repeatedly fail to submit reports with little consequence.

- A private landfill was originally permitted on June 14, 1972. On June 26, 1973, PCA sent a letter to the landfill listing several violations of permit conditions including the failure to submit any water quality monitoring reports. PCA sent letters in April 1974, May 1974, April 1977, and December 1979 informing the landfill owner that water quality monitoring reports were overdue. PCA issued a notice of violation for reporting and other violations in April 1980. In July 1981, the landfill signed a stipulation agreement requiring it to correct deficiencies, upgrade its water quality monitoring system, and send in required reports. The landfill spent several years doing the hydrogeologic investigation and preparing the water quality monitoring plan. A water quality monitoring plan was finally submitted in June 1985 and amended in January 1986. PCA commented in February 1986 requesting revisions. After a period of negotiation over the number and location of monitoring wells, the new wells were constructed in late 1987. PCA sent another letter in April 1988, informing the landfill that reports were late.

- A small county-owned landfill received its permit in July 1972. PCA informed the landfill in June 1974, July 1975, April 1977, December 1979, November 1983, and April 1988 that water quality monitoring reports had not yet been submitted. During this time there were plans to close the site, convert it to a transfer station, or convert it to a demolition landfill. The site was finally closed in 1985, but the monitoring system was never upgraded and the water quality monitoring reports were never submitted. No enforcement actions were ever taken.

- A private landfill received its permit in September 1972. PCA informed the landfill in April 1977 that water quality monitoring reports were overdue and in June 1983 that no monitoring reports had ever been received. The county is currently negotiating to purchase the site, but the landfill never had a monitoring system and PCA has never received water quality monitoring reports. PCA has taken no enforcement actions on this site.

- A private landfill received its original permit in August 1974 and an amended five-year permit in November 1985. PCA informed the

landfill in December 1979, March 1982, and January 1984 that monitoring reports had not been received. After the facility was re-permitted in November 1985, it began the process of submitting required studies and upgrading its water quality monitoring system. Meanwhile, PCA informed the landfill in February 1986 that it had not received water quality monitoring reports for 1983, 1984 or 1985. No enforcement actions were ever taken.

When PCA issued five-year permits in the 1980s, it required as a condition of the permit many studies and reports including hydrogeologic investigations, water quality monitoring plans, quality assurance/quality control plans, closure and post closure plans, and others. Many of these reports were submitted late and PCA often found them to be inadequate, requiring revisions and re-submittals. In some instances, the five years elapsed or the facility closed before all the required reports were submitted and reviewed. Although the division pressured some recalcitrant facilities into closing, we found that:

- **Most landfills were able to delay the intent of the permit requirements by asking for extensions, submitting incomplete reports, or simply not complying.**

This should not be a problem for future landfills since rules now require reports to be submitted before the permit is issued.

Permit terms and solid waste rules require landfills to comply with certain operating conditions. The division inspects facilities to determine whether the facility is complying and to require that corrective actions be taken when a facility is not complying. Although there is no set inspection schedule, one person in each region is responsible for landfill inspections.[38] Regional work plans call for semi-annual inspections of sanitary and demolition landfills and annual inspections of transfer stations, yard waste composting facilities, and recycling facilities. The division also assigns one central office enforcement staff to each region (including the Twin Cities region) and each is expected to annually inspect each of the open sanitary landfills in their assigned territory. Unless there are problems, industrial and demolition landfills normally have less frequent inspections.[39]

The division does not have computerized information on inspections conducted.

We asked the six enforcement staff at the central office how many inspections they conducted in 1990. None of them had actual counts or readily available records of their activities. Their estimates ranged from "some" to 20. This includes sanitary, industrial, and demolition landfills. The agency's regional director estimated that regional solid waste enforcement officers each do about 30 to 40 inspections per year.

38 PCA recently assigned a regional staff person for solid waste enforcement to the Marshall region after four years without one.

39 The inspection frequency of industrial and demolition landfills varies depending on each site's potential for contamination.

We reviewed files from 27 sanitary landfills, 14 demolition landfills and 12 industrial landfills to determine their frequency of inspection.[40] Because many of the files did not have recent inspection reports, we interviewed the division's enforcement officers to obtain the most recent information.[41] We found that:

- **The division has not met its inspection objectives for 1990.**

Thirteen of the 16 open sanitary landfills in our sample and five of the 12 closed facilities were inspected at least once in 1990 (through November). Only three of the 12 industrial landfills and two of the 14 demolition landfills were inspected in 1990 (through September). Half of the industrial landfills and five of the 14 demolition sites have not been inspected for at least five years.

We also reviewed the inspection reports and enforcement actions for our sample of 27 sanitary landfills. We found that:

- **23 of the 27 sanitary landfills in our sample had violations noted in at least one of its last three inspection reports.**

Most landfills have been cited recently for permit noncompliance.

The most frequent violation cited was for inadequate cover. Among the other problems noted were accepting prohibited waste such as tires or car batteries, excessive litter, not protecting monitoring wells from surface contamination, improper burning of garbage, improper mixing of demolition debris with garbage, and exceeding permitted boundaries.

Although definitions may vary on what constitutes persistent violations, we found that:

- **15 of the 27 sanitary landfills in our sample have had at least three violations in the last three years.**

In responding to violations, the division's enforcement philosophy is to negotiate and work with facilities, as opposed to a strict enforcement approach. This is partly due to the extensive staff resources and expense required to enforce civil penalties and the lengthy litigation process that would be required. The division is also sensitive to the consequences of closing down a landfill. The garbage has to go someplace, and if there is no permitted facility, it often ends up in unpermitted open dumps.

The division's policy when inspectors detect violations is to schedule a follow-up inspection or determine at the next inspection if the problems were corrected. The next step is a *notice of violation* with a timetable for compliance. Eleven of the 27 sanitary landfills in our sample were issued at least one notice of violation for reporting or operational violations of permit terms. However, PCA does not have the authority to issue fines or other immediate

40 All of the demolition and industrial landfills were open. We selected them randomly.

41 In attempting to locate the most recent inspection reports, we found some in the central files, some in piles waiting to be filed, and some in the enforcement officers' files.

consequences if a facility fails to correct the deficiencies listed in the notice of violation.

If the landfill still does not correct the problems, the division will threaten to take legal enforcement action. It will try to negotiate a *stipulation agreement* with up-front civil penalties and future penalties for noncompliance. This requires PCA Board approval. Three of the 27 facilities in our sample signed stipulation agreements. We reviewed the division's enforcement log for fiscal years 1987-90. During this period, 10 facilities paid a total of $26,275 in penalties, mostly for violating the terms of stipulation agreements. This total is considerably less than the fines assessed by PCA's other divisions.

If the facility refuses to cooperate, the board can request an order from the district court for a civil penalty. None of the facilities in our sample were ordered to pay a civil penalty. PCA's Commissioner has the authority to close a facility down if it is operating on an expired permit and is not in substantial compliance with its permit requirements. However, this remedy is not available for facilities that have perpetual permits.

In our review of sanitary landfill files, we found that:

- **Effective enforcement to correct permit violations is the exception rather than the rule.**

Several landfills, in addition to the reporting deficiencies discussed earlier in this chapter, consistently and repeatedly violated permit terms and requirements. In some cases, the division threatened to take action but did not despite continuing violations. For example:

- A private sanitary landfill received its permit in October 1970. Between 1972 and 1989, the division noted 235 violations. During this time, there were only three inspections that detected no violations. The division sent several letters threatening enforcement action for operational and reporting violations but no action was ever taken. The facility finally closed in November 1989. The division is still trying to get the landfill owner to sign a closure agreement for post-closure care and monitoring.

We found many examples of long-standing permit noncompliance.

In some instances, the division issued notices of violation but the deficiencies were not corrected. For example:

- A sanitary landfill received its permit in October 1976. The division issued a notice of noncompliance to the landfill in June 1981 for its failure to confine the garbage to the permitted area, failure to provide adequate cover, failure to have an attendant on duty, failure to control scavenging by animals, and failure to install an adequate water quality monitoring system.[42] Followup inspections in August and December revealed that most of the violations had not been corrected. Problems

42 The division issued notices of noncompliance in 1980 and 1981 as formal statements of violations found during inspections.

were still evident in March 1982 and April 1983 inspections and the division issued a notice of violation in May 1983. It cited the same problems as before and some additional violations, including accepting prohibited waste and failing to dig trenches as specified in the approved landfill design. In July 1983, the division requested a meeting to discuss these violations but no meeting took place. An inspection in April 1984 revealed continued violations.

PCA issued an amended five-year permit in August 1984 requiring updated studies and plans. Most of the division's activity over the next two years related to reviewing and revising these studies. In October 1986, the permit was transferred to the county which requested an expansion. In November 1986, the division informed the county that it would have to improve operations before a permit for expansion would be considered. Since 1986, the division has been reviewing the studies and requirements necessary for an expanded permit. While a November 1987 inspection revealed no operational problems, the three inspections since then (the most recent in July 1990) noted inadequate cover and improper burning. The landfill is currently operating on an expired permit.

The memos and correspondence in this file indicate considerable frustration on the part of division staff. Landfill owners consistently ignored requests to improve operations, but division staff did not think they could prove that the landfill was actually polluting the ground water because the water quality monitoring system was inadequate. Thus, the division was reluctant to take action in civil court.[43]

In a few cases, PCA was able to convince landfill owners to sign a stipulation agreement requiring them to upgrade conditions and setting forth a schedule of fines for noncompliance. The following is an example:

- A privately owned sanitary landfill received its permit in November 1971. During the 1970s, there were frequent letters and internal division memos regarding the landfill's failure to submit water quality monitoring and other required reports and threats to revoke the permit. Inspections in October 1980 and December 1981 revealed inadequate cover and drainage and said the site was not developed according to plans. The division issued a notice of violation in June 1982. The division issued a five-year permit in February 1983. Inspections in June and December 1983 revealed continued violations. In July 1984, PCA revoked the permit but allowed the landfill to continue operating if it signed a stipulation agreement to correct violations and upgrade its monitoring system. The stipulation included a $2,000 civil penalty and fines for future noncompliance with monitoring and operational requirements. The division issued a $500 fine in December 1984 because the landfill failed to submit water quality monitoring reports. A November 1986 inspection revealed

43 Division staff told us that they once tried to close a sanitary landfill but lost the case in court because without a good water quality monitoring system, they could not prove that the permit violations resulted in pollution.

leachate seeps and inadequate cover and drainage. The division issued a $300 fine. Inspections continued to reveal violations and in August 1989, the division assessed penalties totalling $11,800. The fine was not paid and the landfill closed in August 1989 without a closure/post closure plan and without financial assurance.

The examples cited in this section illustrate the division's ineffectiveness in permit enforcement. Managers and supervisors told us that the division does not have the resources to take every landfill that violates any permit condition to court. Division managers and supervisors believe that they can obtain some compliance by working with landfills. However, if a landfill does not wish to comply with reporting and operating requirements, it can usually get away with repeated violations.

Notices of violation have not been an effective enforcement tool.

The division often gives landfills several chances to correct deficiencies and several years may pass before the division issues a notice of violation. And even then, there are no consequences for landfills that ignore the notice. Even when compliance is eventually achieved, it is after years of staff effort during which time the pollution continues.

We think the division needs to take a more aggressive stance to enforce its solid waste rules and apply consequences to landfills that violate them. In order to do this, however, the division needs a workable enforcement tool. It is a drain on resources to revoke a permit or bring an action in civil court, and even then the division's efforts may not be successful. The division needs an intermediate step to induce permitees to comply with reporting and operational requirements. Accordingly, we recommend that:

- **The Legislature should grant the Ground Water and Solid Waste Division the authority to issue admistrative penalties for violations of solid waste rules after the Commissioner outlines the potential uses of this authority.**

PCA already has this authority for hazardous waste violators and we think it is necessary for solid waste violators as well. As is the case with hazardous waste, there could be a grace period for the facility to correct deficiencies before the penalty becomes effective. Failure to comply could carry additional penalties.

There are some enforcement issues that will require more than administrative penalties to rectify. We find it alarming that after 20 years of solid waste regulation, many landfills still do not have adequate monitoring systems. In our view:

- **The division should assign top priority to compelling sanitary landfills to upgrade water quality monitoring systems.**

This effort should begin with the open sanitary landfills. The division should establish a timetable to bring each of them into compliance. Since facilities on perpetual permits must comply with solid waste rules, the division has the

authority to enforce its water quality monitoring requirements. Once the open facilities are upgraded, the division should upgrade the systems of closed facilities.

In our view, the division has not systematically prioritized enforcement needs and established a consistent enforcement policy. Rather, the division has responded to crises on a case by case basis. Some landfills have been able to delay compliance with permit terms and solid waste rules because the agency has not effectively forced the issues. Staff turnover has contributed to the problem, since a new enforcement officer is often unaware of a site's enforcement history. Thus, our recommendation earlier in this chapter that the division should develop an effective process to deal with staff turnover applies to enforcement as well.

The fact that the number of open sanitary landfills has dwindled and will continue to dwindle should make the division's enforcement responsibilities more manageable. Nevertheless, we believe that:

- **The division needs to continue its recent efforts to establish a written policy outlining its enforcement priorities and goals, the approach it will take to achieve those goals, and a reasonable timetable.**

SUPERFUND CLEANUPS

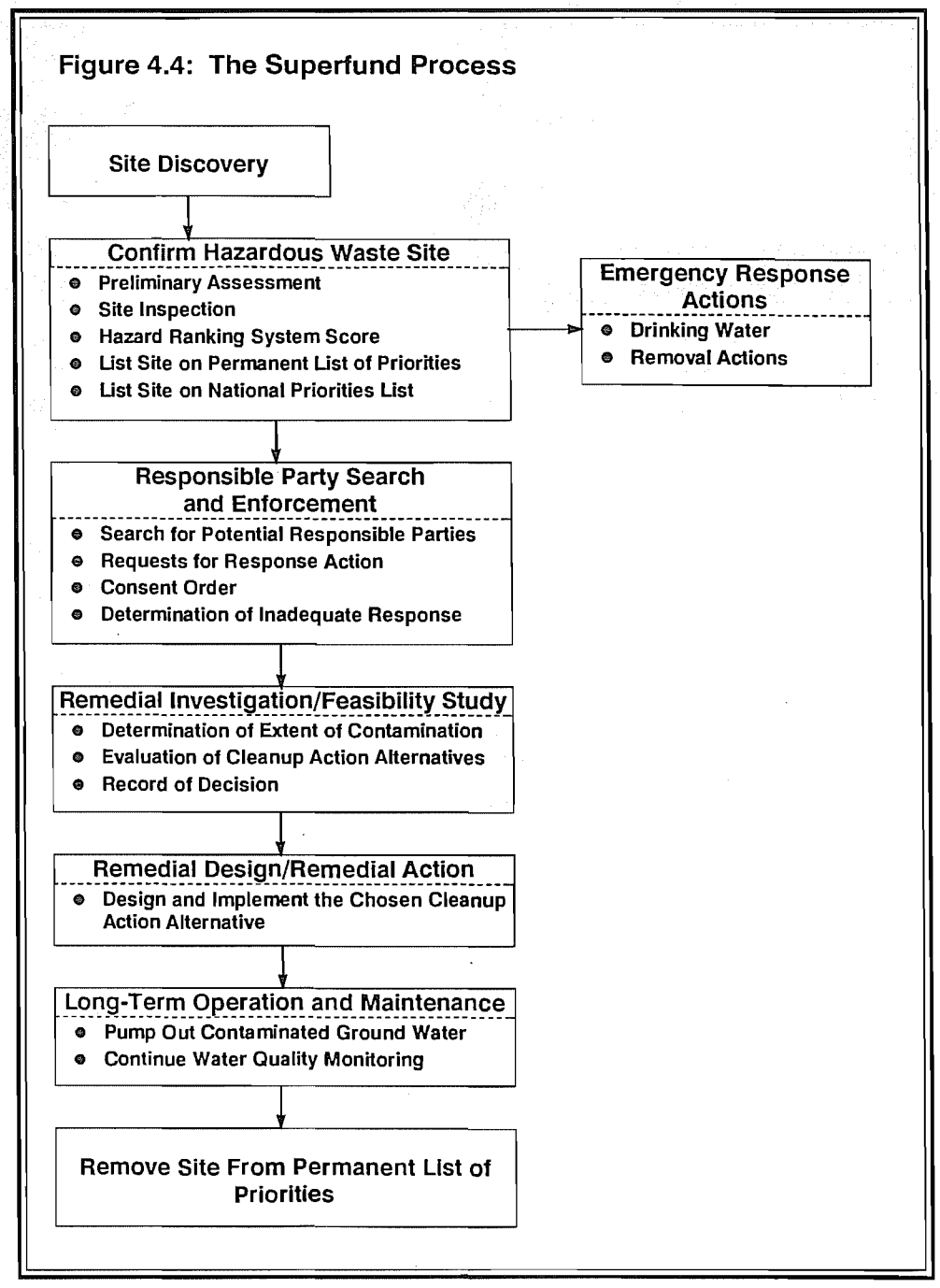
The superfund program cleans up contaminated hazardous waste sites.

The federal and state *superfund* programs were established in 1980 and 1983, respectively. They are designed to clean up sites contaminated by hazardous waste. The goal of the programs is to find the parties responsible for the contamination and make them pay for the cleanups. Federal and state superfunds pay for cleanups when responsible parties are not found or are unable to pay.

There are three aspects of the superfund cleanup process: identification and scoring of the contamination (site assessment), the search for responsible parties, and the cleanup itself. The scoring of contaminated sites and the search for responsible parties normally preceed the actual cleanup, but there are exceptions. For example, emergency cleanup actions may be necessary before the site can be scored. Or information may come to light during the cleanup that results in a new search for responsible parties. Figure 4.4 presents an overview of the superfund process.

Site Assessment

Site assessment is the process of investigating reports of possible contamination, determining the validity of the reports, and determining the danger to human health and the environment presented by the contamination. Sites are usually referred to the division by citizens, local governments, other state agencies, and other PCA units. The division's site assessment efforts are federally funded.



There are two phases of site assessments: preliminary assessments and site investigations. Preliminary assessments involve a search of PCA's files and records on the site, a site visit, and interviews with the parties bringing the complaint, the owner of the site, neighbors, and other relevant parties. On this basis, the division assigns a preliminary score, based on the *Hazard Ranking System.*

The Hazard Ranking System, established by EPA, is used to rate the threat that a contaminated site poses to human health and the environment. Scores

are calculated for three pollution paths: ground water, surface water, and air. Each path is scored on five criteria: 1) whether there is an observed release (e.g., a leaking drum); 2) route characteristics, such as permeability of the soil and bedrock; 3) containment, such as lined vaults or natural barriers; 4) waste characteristics (toxicity); and 5) proximity to population and ground water use. The result is a score between 0 (no danger) and 100 (extreme danger).[44]

If the preliminary score is 25 or greater, federal rules authorize the state to spend federal money to conduct a site investigation, including soil borings and water quality monitoring.[45] PCA and EPA revise the preliminary score based upon investigation results.

The division completed 17 preliminary assessments and 13 site investigations in fiscal year 1990. EPA contracted with its own site investigation team to do 23 additional site investigations in Minnesota. Division staff feel that the EPA contractor's assessments lack sufficient detail, and hope to eventually do all of the site investigations themselves.[46]

If a site receives a HRS score of 1.0 or greater, it is placed on the state superfund list called the Permanent List of Priorities. If the score is 28.5 or higher, the site is also eligible for the federal superfund list called the National Priorities List.[47] Placement on the National Priorities List means that the site is eligible for federal superfund money to pay for the cleanup. It also means that EPA plays an active role in the cleanup process.

As of October 1990, there were 166 sites on the state superfund list.

As of October 1990, Minnesota had 166 sites on the state superfund list.[48] Forty-four of the sites were also on the federal list. In recent years, EPA has added very few sites to the federal list so that it could concentrate on cleaning up the sites already on the list. Minnesota has 41 sites with scores above 28.5 that are not on the federal list. PCA has nominated 15 of those sites for inclusion on the list and is awaiting EPA action.

---

44 EPA has drafted proposed rules revising the methodology for calculating HRS scores. The new methodology broadens the scoring criteria from a narrow emphasis on dangers posed to human health to a broader concern with the overall environmental impact of contamination.

45 Water quality samples are sent to an EPA contract laboratory for analysis.

46 There is little comparative data regarding PCA's efficiency in completing site assessments. EPA reports that 98 percent of all potential sites in Minnesota had been assessed as of June 1990, versus 92 percent nationwide. U.S. Environmental Protection Agency, *Superfund Quarterly Management Reports* (Washington, D.C., June 1990).

47 When the federal superfund was created, EPA determined that it could only handle the 200 worst sites. This resulted in a scoring cutoff of 28.5 for inclusion on the National Priorities List. EPA continues to use that cutoff.

48 At its December 1990 meeting, the PCA Board added 14 new sites and deleted one existing site. Since 1983, PCA has deleted 11 sites from the list because cleanup actions were completed and long-term monitoring was unnecessary.

Responsible Party Search and Enforcement

The responsible party search and enforcement phase involves locating the parties responsible for pollution and getting them to pay for the cleanup. If a responsible party cannot be found, or if the responsible party cannot afford to conduct the cleanup, then the division manages the cleanup using state or federal superfund money. Figure 4.4 lists several steps in the responsible party search.

This phase of the superfund process has two general parts: determining who are the responsible parties and getting them to accept responsibility for the cleanup. In some cases, a party readily accepts responsibility, but sometimes the source of contamination is unknown and division staff must search for responsible parties.[49]

When the division identifies who has caused the problem, it informs the responsible party of its intent to ask the PCA Board to formalize the finding. The PCA Board then issues a *request for response action* if it determines that the responsible party is a current property owner of the site, a past property owner during the time of disposal, a hauler who hauled wastes to the site, or a generator of the wastes that ended up at the site. If the responsible parties desire, PCA negotiates a consent order with time frames for completing cleanup phases. Requests for response action and/or consent orders formally designate the responsible parties and provide a structure and schedule for conducting site investigations, selecting a cleanup alternative, and implementing the cleanup. They both require responsible parties to conduct and pay for cleanups.

PCA has done a good job getting responsible parties to pay for cleanups.

EPA's Region V superfund administrator told us that Minnesota has an excellent record in getting responsible parties to pay for cleanups. A recent study prepared for EPA by the Environmental Law Institute also commended PCA's efforts. The study pointed to PCA's steadfastness in requiring responsible parties to pay for cleanups as a factor in obtaining their cooperation.[50]

As of October 1990, 120 cleanups were in progress.[51] PCA has issued requests for response actions for 69 of those cleanup sites.[52] Responsible par-

---

49 Division staff have several methods to locate potential responsible parties. These include: 1) a title search of the area where the contamination occurred; 2) a survey of area businesses and examination of their inventory records to determine if they generated or used the type of wastes or products found; 3) interviews of waste haulers and searches of their records; and 4) depositions from current and former employees of a company, neighbors, and others who may have witnessed waste disposal. As part of this search, PCA sends formal *requests for information* to potential responsible parties. These requests assist in the search and inform the potential responsible parties that they may be liable for the cleanup.

50 Environmental Law Institute, *Enhancing State Superfund Capabilities: Nine State Study (Draft Report)* (Washington, D.C., 1990), 71.

51 PCA is conducting emergency drinking water actions at four additional sites.

52 Twenty-two of those responsible parties subsequently also signed consent orders.

ties at 23 other sites signed consent orders. In five older cases, responsible parties paid for a cleanup without a consent order or a request for response action. Thus:

- **As of October 1990, responsible parties were conducting 97 of the 120 cleanups (81 percent) in progress.**

PCA is managing cleanups at the other 23 sites. When the division determines that the responsible party is unwilling or financially unable to cooperate with the request for response action, the PCA Board issues a *determination of inadequate response*. This authorizes the division to use state or federal superfund money to complete the investigation and cleanup.[53] If a responsible party with financial means is found, PCA can recover these expenditures. This authority is important since it induces responsible parties to cooperate in conducting the cleanup.[54]

Cleanup

Figure 4.4 shows the site cleanup process that EPA requires for sites on the National Priorities List. PCA follows the same procedures for state sites. The cleanup process involves emergency response actions (if necessary), investigating the contamination, selecting a cleanup strategy, designing and implementing the cleanup, and follow-up monitoring.

There are basically two types of emergency response actions: removal of obvious sources of contamination (such as leaking drums) and finding alternate drinking water supplies (such as bottled water, another community's water system, or a new well).[55] The division uses the superfund to pay for emergency response actions and seeks reimbursement from responsible parties if they are found.

PCA does not keep separate records of removal actions, but it does report responding to 19 drinking water emergencies.[56] Our review of superfund case files clearly indicates that the division has taken prompt emergency response actions when it has evidence of immediate threats to human health or the environment.[57]

Responsible parties hire consultants to prepare *remedial investigations* and *feasibility studies*. If there is no responsible party, the division has four contrac-

53 To use federal funds, the site must be on the National Priorities List and EPA must approve the expenditures.

54 There is only one case where a facility has challenged PCA's authority to recover cleanup expenses. In this case, the responsible party managed and paid for the actual cleanup but has refused to pay PCA's administrative expenses. This case is currently pending in district court.

55 If tests indicate that drinking water is contaminated, the Department of Health issues a drinking water advisory. PCA then takes emergency response action.

56 Minnesota Pollution Control Agency, *A Report on Use of the Minnesota Environmental Response, Compensation and Compliance Fund During Fiscal Year 1990* (St. Paul, 1990), 11.

57 While emergency response actions usually take place early in the cleanup process, as shown in Figure 4.4, discoveries at later phases of the investigation and cleanup may also require emergency responses. For example, PCA is currently responding to the discovery of dioxins during the remedial investigation phase of one of the ongoing superfund cleanups.

tors to investigate sites and do cleanups. For each cleanup project, the division solicits proposals from the four contractors and assigns the project based on the proposal content and the contractors' workloads. As is the case with responsible party cleanups, the division reviews project plans and work products.

The remedial investigation defines the extent of the problem. It usually requires a hydrogeological investigation, including soil borings and monitoring wells to identify the ground water contamination plume and its movement. The feasibility study evaluates options for cleaning up the contamination, ranging from no action to treatment of the contamination source (e.g., excavation of buried drums, removal of contaminated soil, and ground water pumpout and treatment). Based on the feasibility study, the division selects a cleanup plan. After a public hearing and 30-day comment period, PCA's Commissioner issues a *record of decision* that summarizes the site history and justifies the chosen cleanup plan.

After PCA issues the record of decision, the responsible party must prepare a *remedial design* to implement the selected remedy. If there is contaminated ground water, the chosen alternative usually requires that it be pumped out and treated. It often takes years before the contamination is reduced to an acceptable level, so cleanups require long-term monitoring.

Table 4.4 shows the progress the division has made in cleaning up contaminated sites. We found that:

- **Cleanups have been completed at 19 percent of the sites but have not yet begun at 28 percent of the sites; the remainder of the sites are part way through the cleanup process.**[58]

Most contamination sites have cleanups underway.

Table 4.4: Action Taken on Minnesota Superfund Sites as of October 1990

	Number	Percent
No Action*	46	28%
Remedial Investigation in Progress	40	24
Remedial Investigation Complete	13	8
Feasibility Study Complete	25	15
Remedial Design Complete	10	6
Remedial Action Complete: Long-Term Monitoring and Maintenance Ongoing	32	19
Total	166	100%

Source: Minnesota Pollution Control Agency, *Status of Minnesota Hazardous Waste Sites* (St. Paul, October 1990).

*Excludes emergency response actions such as providing an alternate water supply.

58 For our purposes, cleanup actions exclude emergency responses. Cleanups are considered complete when they enter the long-term monitoring and maintenance phase.

Minnesota has made more cleanup progress than other states.

EPA's Region V superfund administrator told us that, compared to other states, Minnesota has an excellent record of cleaning up contaminated sites. As of June 1990, 62 percent of Minnesota's sites on the National Priorities List had completed remedial investigations and feasibility studies versus 41 percent nationwide. Remedial actions were complete or under construction at 46 percent of Minnesota's sites versus 24 percent nationwide.[59] EPA is sufficiently satisfied with Minnesota's progress that it has allowed PCA to be the lead agency for managing almost all the Minnesota sites on the federal superfund list.[60] Our review of state superfund programs profiled in the Environmental Law Institute study also convinces us that Minnesota is further along than most other states in cleaning up contaminated sites.[61] Nevertheless, Table 4.4 shows that much work remains to be done. The superfund process is a long-term program. Division managers prefer to manage resources so that they can deal effectively with the most serious sites first before starting new cleanups, so many of the less serious sites have not yet been addressed.

Table 4.5 compares progress on cleanups at sites where the responsible parties are conducting the cleanup with division oversight and enforcement and sites without responsible parties where PCA contractors are conducting the cleanup with division oversight. We found that:

- **There is no appreciable difference in cleanup progress between sites with responsible parties and sites without responsible parties.**

Table 4.5: Comparison of Cleanup Progress for Sites With and Without Responsible Parties

	Sites Without Responsible Parties		Sites With Responsible Parties	
Phase	Number	Percent	Number	Percent
Remedial Investigation in Progress	8	35%	32	33%
Remedial Action in Planning or Implementation Phase	9	39	39	40
Cleanup Complete*	6	26	26	27
Total	23	100%	97	100%

Source: Minnesota Pollution Control Agency, *Status of Minnesota Hazardous Waste Sites* (St. Paul, October 1990).

NOTE: Includes only sites where cleanup activities have begun.

*Sites currently in long-term monitoring and maintenance phase.

59 U.S. Environmental Protection Agency, *Superfund Quarterly Management Reports* (June 1990).

60 EPA is the lead agency for parts of three sites.

61 U.S. Environmental Protection Agency, *An Analysis of State Superfund Programs: 50-State Study* (Washington, D.C., 1989).

Table 4.6 examines the relationship of some other characteristics of superfund sites to cleanup progress. It shows that the division has made more progress on the most serious sites and the sites that were discovered before 1985. The table also indicates that the division has made less progress on landfill sites. Only two landfill sites have been cleaned up and no cleanup action has been undertaken in almost two-thirds of the landfill sites. Viewed differently,

- **Landfills make up 33 percent of the sites on the superfund list but 74 percent of the sites where no action has been taken.**[62]

Progress has been greatest at older, more seriously contaminated sites, and slowest at landfill sites.

Table 4.6: Superfund Cleanup Progress by Selected Site Criteria

	No Cleanup Action[a]		Investigation/ Cleanup In Progress		Cleanup Complete[b]	
Health Hazard	Number	Percent	Number	Percent	Number	Percent
HRS Score Above 28.5 Site on NPL	0	0%	31	70%	13	30%
HRS Score Above 28.5 Site not on NPL	9	21	26	62	7	17
HRS Score Below 28.5	37	46	31	39	12	15
Date Site Placed on Superfund List						
1984-1985	10	11	52	58	27	30
1986-1989	36	47	36	47	5	6
Is Site a Landfill?						
Yes	34	62	19	35	2	4
No	12	11	69	62	30	27

Source: Minnesota Pollution Control Agency, *Status of Minnesota Hazardous Waste Sites* (St. Paul, October 1990).

[a]Excludes emergency response actions such as providing an alternate water supply.
[b]Includes sites currently in the long-term monitoring and maintenance phase.

We also examined the permanence of PCA's superfund cleanups. Some recent national studies have found many instances where contaminated substances are merely contained on-site or transferred to another site with no permanent solution to the problem of contaminated soils and ground water.[63] These types of cleanup strategies do not permanently end the threat of pollution. We found that:

62 Division managers note that PCA did not begin to address landfill sites until 1986. The division prefers to address open landfills through permit enforcement actions and financial assurance requirements rather than by expending superfund money. Thus, cleanup actions have begun at 16 of the 29 closed landfill sites but only five of the 26 open landfill sites.

63 U.S. Congress, Office of Technology Assessment, *Superfund Strategy* (Washington, D.C., 1985); U.S. Congress, Office of Technology Assessment, *Coming Clean: Superfund's Problems Can Be Solved* (Washington, D.C., 1989).

- **In most instances, the division requires effective long-term treatment of contaminated sites and does not accept temporary containment strategies.**

In our sample of 17 superfund files, we found two sites where contaminated material was stored on site. In one site, soils contaminated with solvents, oils, and paint sludge were placed in a containment facility on company property. The containment facility had a double liner and a leachate collection and monitoring system. At another site, contaminated byproducts from a coking plant were removed and shipped to a hazardous waste landfill in Illinois. Some contaminated soil was also removed but the remainder of the soil was left on site and capped with clean soil in between two layers of clay. In both cases, PCA took precautions to minimize the chances of additional ground water contamination. Division managers told us that these were early cleanups and that containment strategies like these are no longer selected. All of the other sites in our sample that had reached the remedial action stage had removed contaminated soils and drums and had installed a ground water pumpout and treatment system.[64]

Reasons for Lengthy Cleanups

Using a sample of 11 superfund sites, the division has recently analyzed the duration of superfund cleanups, as shown in Table 4.7. Excluding the site assessment before cleanups begin and the long-term monitoring afterwards, it takes an average of 7.3 years for cleanups at sites with responsible parties and 5.5 years for cleanups at sites without responsible parties.[65]

Superfund cleanups take from five to seven years.

Table 4.7 shows that remedial investigations take about two years to complete. Feasibility studies take an additional two years to complete for cleanups conducted by responsible parties. Division managers told us that this is primarily because responsible parties often propose inadequate least cost cleanups that are unacceptable to the division. This results in disputes and additional work. Table 4.7 also shows that remedial designs take longer for cleanups at sites without responsible parties. Division managers attribute this delay to a previous requirement that PCA rebid contracts for remedial designs. PCA's switch to general contracts with four consultants has helped speed up the remedial design phase of cleanups conducted by PCA contractors.

Our review of superfund files support the findings presented in Table 4.7. In general, most of the time tends to be spent doing the remedial investigation and feasibility study. Once a solution is agreed upon, the actual cleanup proceeds more rapidly.

Our review of case files indicates that there is no single cause for delays. In some cases, responsible parties refused to acknowledge responsibility or coop-

64 EPA's Region V superfund administrator confirmed Minnesota's increasing emphasis on permanent treatment solutions. He pointed to Minnesota's pioneering use of biological treatment as an example of this emphasis.

65 The two columns of Table 4.7 are not strictly comparable since they start from different points in the process.

Table 4.7: Number of Months Spent on Superfund Cleanups

	Sites Without Responsible Parties	Sites With Responsible Parties
Issue request for response action	–	8.0
Consent order negotiation	–	7.0
Remedial investigation*	24.3	20.8
Feasibility study	5.0	24.3
Issue record of decision	2.3	8.0
Remedial design	22.3	8.7
Remedial Action	12.0	11.3
	65.9 (5.5 years)	88.1 (7.3 years)

Source: Pollution Control Agency, Ground Water and Solid Waste Division.

*For sites without responsible parties, this phase begins with the assignment of the site to a PCA contractor.

erate with the cleanup, thus requiring PCA Board actions. In other cases, the division spent its time arranging for alternate sources of drinking water rather than initiating the long-term cleanup. In one case, the division put the cleanup process on hold for two years after the responsible party died.

Delays are also caused by disputes over how the remedial investigation is conducted and whether or not the investigation is adequate. We found many instances where a responsible party submitted a required report that the division found to be unacceptable or incomplete. The division required revisions, and sometimes the revisions did not meet PCA's expectations. Because of revisions, an investigation that should take six months may take one to two years. As the process lengthens, of course, there is a greater likelihood of PCA staff turnover.

The division could reduce the time required to complete investigations and cleanups.

The division requires responsible parties and its own consultants to prepare work plans before actually doing a remedial investigation. This reduces the likelihood of wasted efforts for unacceptable studies. However, time is still spent arguing over the work plan, such as the number and location of monitoring wells and soil borings and quality assurance requirements.[66]

We think the division could reduce the time required to complete a superfund investigation and cleanup. We recommend that:

- **The division should provide written guidelines on acceptable standards for superfund remedial investigations.**

66 In one case, a remedial investigation took nearly two years to complete, largely because of a disagreement between EPA and PCA's contractor over the contents of the laboratory quality assurance component of the investigation work plan.

The division has now had enough experience managing superfund cleanups to know what it wants in a remedial investigation and what types of remedial actions it will accept. It might be possible to provide a boilerplate form, with consultants filling in site-specific data. Consultants could be required to follow the general requirements for remedial investigations or justify deviations.

Division managers agree with this recommendation. The division has recently prepared a draft of an exhibit to be attached to requests for response action that provides an outline for remedial investigations and feasibility studies and describes PCA's expectations for how those reports should be prepared and the information they should contain. We believe that this exhibit should be sent to all consultants and responsible parties whose cleanups are still in the remedial investigation and feasibility study phases.

We also recommend that:

- **The division should reduce the scope of feasibility studies.**

The purpose of the feasibility study is to evaluate the possible solutions and select the most appropriate one. Again, the division has enough experience to know what kinds of solutions it will or will not accept. The division should make this explicit through written policy statements or by incorporation into requests for response action and consent orders. For example, the division usually requires pumpout of contaminated ground water, excavation of contaminated soil, and closing and capping of landfills. The division should require responsible parties to adopt these solutions unless they are impractical or unnecessary.

Division managers agree with this recommendation. They say that the primary cause for delays in completing superfund cleanups is the desire of responsible parties to hold down costs versus PCA's mission to protect the environment. Division managers have sent a memo to division staff outlining procedures to streamline remedial investigations and feasibility studies at non-federal sites. The division is currently working on policy statements for selecting remedies and for ground water and soil cleanup standards that it hopes will send a clear message to responsible parties that PCA requires effective and timely cleanup strategies. The non-degradation standard contained in the 1989 Ground Water Protection Act should assist PCA's efforts in this regard.

Another area where time could be saved is the review of documents associated with the remedial investigation. We recommend that:

- **The division should allow consultants to submit single documents that apply to all of the cleanups they manage.**

Some of these documents, such as the quality assurance and safety plans, are basically the same from site to site. These plans provide some guarantee that the data gathered and analyzed are accurate and that other safety and procedural requirements are met. Since consultants typically work on several superfund sites, each consultant could be required to have on file an approved plan

or protocol. Likewise, consultants could be required to use an EPA-approved laboratory or a laboratory with an approved quality control plan. This would reduce the time it takes to prepare individual remedial investigations and the time it takes division staff to review them.

If these measures are successful in reducing the disagreements that arise over how to conduct a remedial investigation and the appropriate cleanup strategy, it may also be possible to save time by combining the remedial investigation and feasibility study steps. Some of the sites have already done this. The division should require interim progress reports, however, to make sure that the investigation is proceeding in an acceptable manner and that strategic disagreements can be resolved before too much work is completed.

In addition to streamlining the remedial investigation and feasibility stages of the cleanup, the division should consult with the Attorney General as to whether it would be feasible to issue administrative penalties to responsible parties who fail to meet deadlines specified in requests for response action and consent orders. Requests for response action currently include requirements for completing cleanup stages within specified time frames, but there are no penalties for failing to meet deadlines. The division has been able to use the threat of managing the cleanup itself and obtaining reimbursement from the responsible party to induce parties to accept responsibility and start the cleanup process. However, this inducement has been less effective in getting responsible parties to move quickly once the investigation and cleanup process has begun. We believe that if the division included penalties for not meeting deadlines, it would encourage responsible parties to speed up the process.

Administrative fines are small compared with total cleanup costs. To further encourage timeliness, the division could include a clause in requests for response action and consent orders that it will issue a determination of inadequate response, take over responsibility for the cleanup, and seek reimbursement if the responsible party consistently fails to meet deadlines.

Superfund Landfill Sites

We noted earlier that the division has made less progress in cleaning up landfill sites than other superfund sites. As of October 1990, cleanup actions have not yet begun for 34 of the 55 landfill sites on the state superfund list.[67] Of those, only seven have HRS scores above 28.5, so most of them are not among the most serious sites. Furthermore, the division has taken necessary emergency response actions.

Nevertheless, these landfills represent a potential drain on the state superfund since the number of landfills on the superfund list will increase as landfills upgrade their water quality monitoring systems. According to division staff, most sanitary landfills will end up on the state superfund list. In addi-

67 There are actually 56 landfills on the state superfund list, but two of the landfills are combined in one site.

tion, few of the unpermitted open dumps that existed in the 1970s and early 1980s have been assessed for possible inclusion on the superfund list.

If all of these potential sites are assessed, and if, as expected, most are eligible for the superfund, there will not be sufficient funds to manage the cleanups. The division estimates that each landfill cleanup has a potential cost of from $2 to 10 million and that the total cleanup cost for open and closed landfills could exceed $300 million, far greater than the June 30, 1990 superfund balance of $13.9 million.[68]

The 26 landfills on the superfund list that are currently open have provided financial assurance to cover future cleanup costs, although some will close before they build up enough reserves. The 30 closed landfills on the superfund list have no revenue raising capability.[69] Most private landfills do not have the financial resources to pay for cleanups. Municipally owned landfills have taxing and bonding authority, but the Legislature has capped their potential liability at $400,000 per municipality up to a total of $1.2 million per site.[70]

There is not enough money in the superfund to clean up all the landfills on the superfund list.

The Legislature established the Metropolitan Landfill Contingency Action Fund in 1984 to help pay for landfill closure and post-closure care and to provide funds for cleaning up metro area landfills that have been closed at least 20 years. This fund receives one-fourth of the revenues from a $2 per cubic yard fee on wastes deposited in metro area landfills.[71] In 1989, the Legislature created a similar Greater Minnesota Landfill Contingency Action Fund to assist non-metro counties. However, before any funds were placed in this fund, the 1990 Legislature abolished it, retaining the $2 per cubic yard fee. Proceeds go to the county general funds to be used for landfill abatement, closure and post-closure costs, and cleanup actions.[72] Division managers do not think that these revenues will have a significant impact on the problem.[73]

The Legislature has several options for addressing landfill cleanup costs:

- **The Legislature could appropriate money to the superfund in sufficient amounts to allow cleanups of landfills when they are placed on the state superfund list.**

- **The Legislature could establish a new funding source such as an additional tax on garbage or a guaranteed loan program for landfill cleanups.**

---

68 Minnesota Pollution Control Agency, *A Report on the Use of the Minnesota Environmental Response, Compensation and Compliance Fund During Fiscal Year 1990* (St. Paul, 1990), 5, 23; Minnesota Office of Waste Management and Minnesota Pollution Control Agency, *State Solid Waste Policy Report: Issue Statements and County Planning Background Chapter (Public Comment Draft)* (St. Paul, 1990), 96.

69 In some cases, the division may be able to find evidence of private companies that dumped hazardous wastes into the landfills and could be cited as responsible parties.

70 *Minn. Stat.* 466.04, subd. 1.

71 *Minn. Stat.* 473.843, 473.845.

72 *Minn. Stat.* 115A.919, 115A.923.

73 The Metropolitan Landfill Contingency Action Fund had an $8 million balance at the end of fiscal year 1990. There is no statewide accounting of the fees currently going to non-metro counties.

- **The Legislature could repeal the liability limits on counties for environmental cleanups and grant them special bonding or taxing authority to pay for cleanups.**

- **The Legislature could do nothing and allow the superfund to pay for cleanups of only the most serious sites as funds become available.**

Many landfills are in relatively isolated areas and pose no immediate threat to drinking water supplies, although they have potential long-term environmental effects. Delaying action increases the likelihood that the contamination plume will spread and the ultimate cleanup cost will be greater. As an intermediate measure, the Legislature could select one of the first three options and direct PCA to install pumpout systems to contain the ground water contamination, leaving the permanent remedy of properly closing and capping the landfill to a later date.

PCA has the expertise to assess the extent of this problem and evaluate the cost and effectiveness of proposed solutions. Therefore, we recommend that:

- **PCA should develop a plan to deal with landfill contamination and present it to the 1992 Legislature.**

MANAGEMENT INFORMATION SYSTEMS

PCA's Ground Water and Solid Waste Division needs an effective management information system to administer requests for new facility permits, track the current status of permitted facilities, monitor submissions of reports, and track enforcement efforts. Information systems can also help manage staff assignments and monitor performance. We found that:

- **The Ground Water and Solid Waste Division does not have an effective management information system.**

Landfill and superfund records are maintained in central files. Important information is not computerized and there is no way for management to track the status of permits and staff activities. The division's tracking system consists of periodic updates of lists. It takes considerable staff time to manually update these lists and we found essential information missing. For example, management has no way to determine how long permit applications are awaiting action except to ask the engineer or hydrologist who is working on it.

The lack of an adequate management information system hampers the division's ability to regulate compliance with permit conditions and solid waste rules. For example, the division had to survey its hydrologists in order to tell us how many facilities have upgraded ground water monitoring systems. Similarly, the division had to conduct a special study to determine how long each

phase of the superfund cleanup takes.[74] There is no system to automatically inform staff that a required report is overdue. Thus, a year or more can go by before someone notices that a facility has not been sending in quarterly monitoring reports. The lack of an adequate information system also exacerbates the division's staff turnover problem. With no easily accessible enforcement history, the new staff member has to start from scratch.

The division has recently recognized its deficiency in this area and has purchased two management information systems to use with its existing computers that will allow permit and superfund project tracking. The division has installed a permit tracking system that can alert staff to late reports, keep track of enforcement actions, and provide other useful information about permitted facilities. The division is currently entering permit data for open landfills into the system. The division has also purchased a tracking system for its superfund sites that will track cleanup progress and provide summary data but it has not yet installed this system.

The division's permitting and enforcement activities are hampered by an inadequate information system.

We think that the division waited too long to install necessary information systems. We recommend that:

- **The division should assign top priority to implementing its new management information systems and should use them to manage work flow, permit tracking, and enforcement, and to provide the PCA Board with periodic updates of permit status and cleanup progress.**

Division managers agree with this recommendation and say that they are assigning top priority to implementing their new information systems.

SUMMARY

The two major responsibilities of the Ground Water and Solid Waste Division are regulating landfills and managing cleanups under the state and federal superfund programs. We found problems in the time it takes the division to process permit applications and review other documents. We also found that the division has not effectively enforced solid waste rules and permit requirements. Many landfills have been delinquent in submitting water quality monitoring reports and have had repeated operational violations with few meaningful consequences. In addition, many sanitary landfills have inadequate water quality monitoring systems. In part, these problems result because the division lacks adequate enforcement tools. We believe that the division's enforcement record would improve if it had the authority to issue administrative penalties to violators of permit requirements and solid waste rules.

We found that the division has effectively administered the state and federal superfund programs. Minnesota has made greater progress than most states in cleaning up contaminated sites and the division has a good record of getting

74 Case files are often poorly organized and incomplete. We found many references to reports and correspondence that could not be found in the files.

responsible parties to pay for cleanups. Nevertheless, the cleanup process is very lengthy and many sites have not yet been addressed. Additional funding sources will be required to clean up all of the present and potential landfills on the superfund list.

Our primary recommendations are that:

- **The Ground Water and Solid Waste Division should reduce the time it takes to review permit applications and other documents by setting priorities, providing specific time frames to get things done, and holding staff accountable to those time frames.**

- **The division should take a more aggressive approach to enforcing water quality monitoring reporting requirements and compliance with permit conditions and solid waste rules. Top priority should be assigned to upgrading landfill water quality monitoring systems.**

- **The Legislature should grant the division administrative penalty authority to improve the efficiency and effectiveness of enforcement.**

- **The division should continue efforts to streamline the superfund cleanup process.**

- **The division should assign top priority to implementing its new management information systems.**

HAZARDOUS WASTE DIVISION

Chapter 5

State regulation of hazardous wastes is relatively new compared to air, water, and solid waste regulation. The Minnesota Legislature first authorized PCA's hazardous waste program in 1974, and PCA adopted its first hazardous waste rules in 1979. PCA created a separate Hazardous Waste Division in 1987.

We asked:

- **How often does PCA inspect companies that handle hazardous waste, and how long does it take to return violators to compliance?**
- **What accounts for the large increase in staff in this division in recent years?**
- **Does PCA effectively oversee the cleanup of leaks from storage tanks and pipelines?**

To answer these and other questions, we interviewed staff, reviewed data from the division's information systems, and accompanied staff on an inspection of a company that generates hazardous waste. We reviewed enforcement files for random samples of 35 underground tank cleanups and 17 companies with serious hazardous waste violations. In addition, we surveyed the seven Twin Cities metropolitan area counties, each of which is required by Minnesota law to operate a hazardous waste program.[1]

In general, we conclude that PCA has developed a comprehensive framework for regulation of hazardous waste. Staff conduct frequent inspections of the facilities that handle the largest quantities of hazardous waste, but very limited inspections of companies that generate lesser amounts. We also found considerable room for improvement in the timeliness of the division's enforcement actions. The division has grown rapidly primarily because dedicated state and federal funds have been available for its leaking storage tank program. This program has provided extensive financial assistance to businesses, although its growth appears to have been disproportionate to the health and environmental threats posed.

---

1 Six counties responded, and we interviewed staff of the seventh.

REGULATORY FRAMEWORK

Hazardous wastes are ignitable, corrosive, reactive, or toxic.

The primary federal legislation governing hazardous wastes is the Resource Conservation and Recovery Act (RCRA), passed by Congress in 1976. RCRA required the Environmental Protection Agency (EPA) to determine criteria for identifying hazardous wastes, and then to identify specific substances that should be subject to regulation. In 1980, EPA determined that wastes were hazardous if they were ignitable, corrosive, reactive, or toxic, and listed about 450 hazardous wastes. EPA recently published rules identifying an additional 25 organic chemicals with hazardous characteristics.

EPA promulgated federal hazardous waste rules between 1980 and 1983, several years after Congress' 1978 deadline. The intent of the rules was to regulate and account for wastes from the time of generation until disposal or treatment—a so-called "cradle to grave" regulatory system. Figure 5.1 summarizes the RCRA regulations for various types of waste handlers. PCA and county hazardous waste staff have identified about 8,000 hazardous waste "generators" in Minnesota but believe this is less than one-third of the state's total generators. Federal and state regulations require generators to disclose

Figure 5.1: Summary of Federal Hazardous Waste Requirements

RCRA Requirement	Generators	Transporters	Treatment, Storage, and Disposal Facilities (TSDs)
Determine if wastes are hazardous	X		X
Obtain EPA identification number	X	X	X
Train personnel in waste management and emergency response	X	X	X
Notify regulators of hazardous waste releases	X	X	X
Develop contingency plans	X		X
Inspect operations periodically	X		X
Track wastes with manifests	X	X	X
Recordkeeping and reporting	X		X
Package labeling		X	
Physical security			X
Use containers, landfills, and other operating areas properly			X
Design and operate waste handling areas properly			X
Ground water monitoring			X
Closure and post closure care and financial responsibility			X

Source: Adapted from U.S. General Accounting Office, *Hazardous Waste: New Approach Needed to Manage the Resource Conservation and Recovery Act* (Washington, D.C., July 1988), 24.

their waste streams, but do not require generators to obtain operating permits. In contrast, facilities that treat, store, and dispose of hazardous waste (TSDs) must obtain permits. Minnesota has 43 TSDs, which appears to be fewer than most other states in EPA Region V.[2] Forty-one TSDs have permits, and PCA expects to issue permits to the other two by spring 1991.[3]

In 1989, Minnesota hazardous waste generators produced about 79,000 tons of waste that were subject to RCRA regulation.[4] As shown in Table 5.1, Minnesota generators shipped about 57,000 tons (71 percent) of this waste to other states. The states receiving the largest quantities of Minnesota wastes were (in order) Illinois, Wisconsin, Arizona, and Oklahoma. In 1989, Minnesota RCRA facilities received only about 21,000 tons of hazardous waste from other states, so Minnesota is a net exporter of waste.

Minnesota is a net exporter of hazardous waste.

Table 5.1: Destination of Hazardous Wastes Generated in Minnesota, 1989

	Wastes Shipped In-State (Tons)	Wastes Shipped Out-Of-State (Tons)
Landfills	0	9,675
Metals recovery facilities	10,339	19,192
Solvent recovery facilities	28	20,657
Thermal treatment	4,937	4,157
Transfer/storage facilities	6,365	329
Other	969	2,653
	22,638	56,663

NOTE: RCRA-regulated wastes only.

Source: Office of Waste Management, "Manifested Shipments of Hazardous Waste by Minnesota Generators: 1983-1989" (St. Paul, July 1990), 4, 6.

As with other federal pollution programs, states have been granted responsibility for implementing most federal hazardous waste regulations. When states demonstrate that their programs are at least as stringent as the federal program, EPA "authorizes" them to operate hazardous waste programs in lieu of the federal program. Within each state, EPA administers federal regulations for which the state has not yet received EPA authorization.

Minnesota first received federal authorization for its RCRA program in 1985, and federal funds now pay for about half of the Hazardous Waste Division's staff. States are required to apply for expanded authorization as federal rules

2 According to EPA, Wisconsin has about the same number of TSDs as Minnesota, but Illinois, Indiana, Michigan, and Ohio each have more than 200 TSDs. However, unlike other states, Minnesota has issued permits for nearly all of its TSDs, and it is likely that many of the other states' TSDs will close when required to apply for permits.

3 Facilities without their final (called "Part B") permits are subject to "permit by rule" under federal regulations.

4 According to Office of Waste Management, "Capacity Assurance Plan, State of Minnesota" (St. Paul, October 12, 1989), an additional 75,000 tons of waste were legally sewered or managed on site in 1987.

change. We found that PCA is authorized for more hazardous waste activities than any other state in EPA Region V. Minnesota is one of only a few states in the nation authorized to oversee cleanups at permitted TSD facilities. PCA negotiates a cooperative agreement with EPA each year and receives a grant to fulfill obligations in the agreement. EPA officials told us that there is a strong working relationship with PCA.

The Hazardous Waste Division has some unique enforcement tools.

In 1987, the Legislature granted the Hazardous Waste Division penalty authority that other PCA divisions do not have. PCA's commissioner may issue administrative penalty orders for up to $10,000. According to state law, the amounts of the penalties may be based on the willfulness and gravity of violations, the number and history of violations, the economic benefit gained because of the violation, and other factors determined by the commissioner. Unlike stipulation agreements, administrative penalties do not require approval by the PCA Board. Except for "repeated or serious" violations, the law requires PCA to forgive penalties if the violator takes appropriate steps to correct the problem. Companies receiving administrative penalty orders may appeal the orders before administrative law judges or in district court.[5]

A second unique enforcement tool available for hazardous waste offenses is criminal prosecution for environmental felonies. Certain hazardous waste violations constitute felonies; violations of other pollution regulations constitute gross misdemeanors, at most. Counties have the first option to pursue criminal prosecutions, but may delegate this to the state Attorney General's Office. So far, the Attorney General's Office has been the lead prosecuting agency in only one case prosecuted in Minnesota, but it has assisted county prosecutors and investigators in other cases.[6] The Attorney General's Office and PCA have actively pursued criminal cases since December 1989. The role of PCA staff has been one of gathering supporting evidence, negotiating settlements, and serving as expert witnesses during prosecutions.

Hazardous waste generators must pay several fees and taxes. Generators in the Twin Cities metropolitan area pay fees set by each county, and PCA sets fees for other generators in the state.[7] All generators (including those in metropolitan counties) pay a fee surcharge that is intended to pay for PCA's statewide regulation of hazardous waste generators. In addition, since 1983, state law has required generators to pay the commissioner of revenue a tax based on hazardous waste volume and destination. Wastes destined for land treatment are subject to the highest tax ($32 per cubic yard), and treated wastes are exempt from the tax.[8] Finally, about 350 of Minnesota's largest generators pay a "pollution prevention" fee to the Office of Waste Management, and a fee to the Department of Public Safety for the state's inventory of toxic releases.

5 State law contains special provisions for an expedited administrative hearing process for administrative penalties. Also, state law authorizes PCA's commissioner to enter into mediation if the alleged violator is willing.

6 According to PCA staff, most criminal cases are settled by plea bargain prior to prosecution.

7 The level of PCA's fees depends on the volume of wastes produced and the methods used to manage the wastes.

8 The Department of Revenue collected hazardous waste taxes totaling $1.3 million in 1987, $1.1 million in 1988, and $700,000 in 1989. Department staff are unsure whether the revenue decline reflects shifts in the types of waste management used by companies.

In 1984, Congress amended RCRA by mandating a regulatory program for underground storage tanks that contain petroleum or other hazardous substances. To help states finance tank cleanups, the 1986 Congress created a trust fund through a tax on motor fuels. As with other RCRA provisions, EPA authorized states (including Minnesota) to administer tank programs deemed comparable in scope to the federal program. In addition, the Minnesota Legislature created its own cleanup fund (the "Petrofund") for leaking tanks in 1987. Revenues for Minnesota's tank fund come from a fee on petroleum distributors of $10 per 1,000 gallons handled. The fee goes into effect whenever the unencumbered balance in the Petrofund falls below $2 million. The fee was imposed for two months in 1987, one month in 1989, and eleven months in 1990. Owners or operators of leaking storage tanks may seek reimbursement for 90 percent of cleanup costs from Minnesota's Petroleum Tank Compensation Board, commonly called the Petroboard.[9] The Petroboard reimburses costs to responsible parties that provide evidence that cleanups have been performed in compliance with a PCA-approved corrective action plan. By state law, the Petroboard may reduce reimbursements if the responsible party failed to: (1) properly notify PCA, (2) cooperate with PCA, or (3) operate tanks with due care or in compliance with rules.

Fees supporting the Petrofund were in effect for 11 months during 1990.

There has been no significant federal regulation of aboveground tanks. Minnesota law required aboveground tank owners to notify PCA of tank characteristics by June 1990.[10] PCA estimates that there are 125 aboveground tanks with capacities exceeding one million gallons, and more than 2,000 smaller tanks. Minnesota's Petrofund can be used to clean up leaks from aboveground tanks, but PCA has done testing, inspection, and monitoring at relatively few aboveground tank sites.

Several agencies besides PCA play important roles in Minnesota hazardous waste policy and regulation. The Office of Waste Management and Minnesota Technical Assistance Program provide information to hazardous waste generators on waste minimization. The Minnesota Department of Transportation regulates companies that transport hazardous wastes and has authority to issue monetary penalties for violations. In addition, state law requires each county in the Twin Cities metropolitan area to establish a hazardous waste program and have its hazardous waste ordinances approved by PCA. The law requires each of these counties to enforce state and county regulations for its hazardous waste generators and TSD facilities.[11]

ORGANIZATION AND STAFFING

Figure 5.2 shows the organization of PCA's Hazardous Waste Division, and Figure 5.3 identifies the functions of staff in the division. The number of staff in the division has grown considerably in recent years. Based on our review of PCA personnel data and organization charts, we found that:

9 The Petroboard consists of the commissioners of PCA and the Department of Commerce, two representatives of the petroleum industry, and one representative of the insurance industry.

10 Prior to 1990, owners were supposed to get lifetime permits for these tanks from PCA.

11 *Minn. Stat.* §473.811, Subd. 5b and 5c.

Figure 5.2: Organization of PCA's Hazardous Waste Division

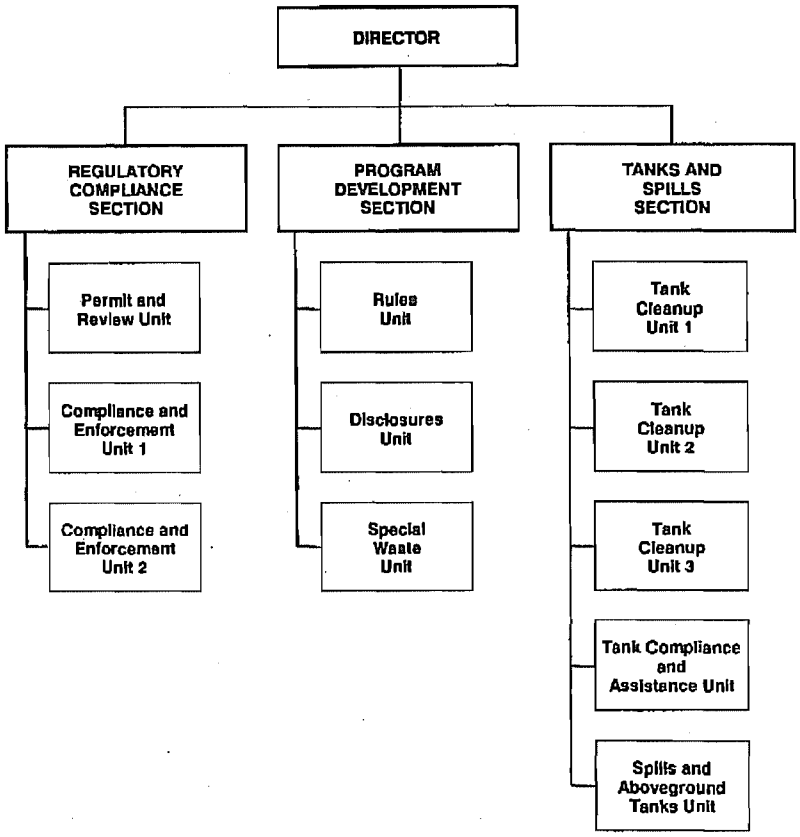


Figure 5.3: Hazardous Waste Division Staffing

1	Division director
1	Assistant division director
1	Senior planner in the assistant director's office who manages the division's budget
1	Pollution control specialist in the assistant director's office who coordinates the division's laboratory services, manages a program to dispose of abandoned drums, and manages the contract for hazardous waste disposal by state agencies
20	Clerical and data entry staff

Regulatory Compliance Section

1	Head of the Regulatory Compliance Section
2	Compliance and Enforcement Unit supervisors (each supervises 9 enforcement staff)
1	Enforcement training coordinator
2	Inspectors monitor compliance with state and federal PCB regulations
2.5	Staff pursue criminal enforcement for hazardous waste violations
12.5	Staff inspect TSD facilities and hazardous waste generators, evaluate hazardous waste manifests, follow up on public complaints, and pursue enforcement actions
1	Head of Permit and Review Unit (supervises 10 staff)
10	Permit staff (6 engineers and 1 pollution control specialist draft permits and conduct financial record reviews; 3 hydrologists review TSD facility ground water monitoring systems and provide technical assistance on TSD and generator site cleanups)

Figure 5.3, continued

Tanks and Spills Section

1	Head of the Tanks and Spills Section
1	Planning grants analyst who administers contracts and EPA grants and tanks and spills programs
1	Computer programmer for the Tanks and Spills Section
5	Unit supervisors
33	Central office staff who oversee cleanups of leaking underground storage tanks (6 project leaders, 16 pollution control specialists, 11 hydrologists)
5	Regional staff who primarily oversee tank cleanups
4	Aboveground storage tank staff (2 oversee cleanups, 1 writes rules and will probably work on enforcement later, 1 approves permits)
4	Spills response staff, who take calls from people reporting possible pollution incidents, refer cases to proper staff, and occasionally coordinate cleanup at the site of major spills. 2,600 incidents were reported to these staff in 1989, 1,200 in 1990
1	Person enters spills data
1	Person is developing a preventive spill program for the Mississippi River
8	Staff maintain an inventory of storage tanks and help tank owners comply with regulations (includes 1 person who is writing tank rules, 1 data entry staff, and 1 person who certifies tank installers)

Program Development Section

1	Head of Program Development Section
1	Head of Rules Unit (supervises 3.5 rule writers, plus 2.5 staff working on lead and used oil issues)
3.5	Staff write general hazardous waste rules
1.5	Staff are working with local and state health departments to write standards for exterior lead and write lead rules
1	Staff works on used oil issues—writing rules, developing educational materials, working with other agencies
1	Head of Disclosures Unit (supervises 10 staff)
10	Staff contact hazardous waste generators to obtain disclosures of waste streams, annual reports, and annual fees (2 staff are data analysts)
1	Head of Special Wastes Unit (supervises 7 staff)
1	Staff provides staff training, technical assistance, and educational materials on waste reduction
1	Staff is conducting a study of batteries (battery content, current disposal practices, disposal options), due in June 1991
5	Staff operate household hazardous waste program (4 staff attend household waste collections around the state, develop permanent collection sites, and provide technical assistance to counties; 1 person develops public education materials)
147	TOTAL STAFF

NOTE: Staffing as of September 1990. The totals do not include 22 student workers: 5 clerical, 11 in central office tank cleanup and regulation, 5 in regional office tank cleanup, 1 in aboveground tank data entry.

- **The number of authorized complement in the Hazardous Waste Division increased from 107 in 1988 to 154 presently, making this the fastest growing PCA division.**

The largest staff increase was in the division's Tanks and Spills Section. Including student workers, this section added about 50 staff during the past three years.[12] Most of these new staff resulted from increased federal and state funding for underground storage tank cleanups.

Most of the staff increases have been in PCA's tanks programs.

The Regulatory Compliance Section includes the division's enforcement and permit staff. Relative to the number of facilities permitted (43), the Hazardous Waste Division has more permit staff (10) than PCA's other divisions. Permit staff are in the process of issuing initial permits to the last of Minnesota's TSDs, ahead of EPA's 1992 goal.[13] There are old waste dumps at about half of Minnesota's TSDs, and permit staff will be spending an increasing amount of time in future years initiating corrective action at these sites.

Staff in the Program Development Section write rules, identify hazardous waste generators and review their waste management methods, develop household hazardous waste programs around the state, and manage the division's computer database. For the most part, the division adopts federal regulations into state rules with few changes, but it also initiates some rules independent of federal regulations.

There has been a relatively high amount of turnover in the Hazardous Waste Division recently. More than one-fourth of the division's staff in mid-1989 were not working in the same section of the division one year later.

ENFORCEMENT

To evaluate the division's enforcement efforts, we examined the frequency of inspections, the time required to issue violations and return companies to compliance, and the division's methods of tracking hazardous waste shipments. During the course of our reviews, it was apparent that the Hazardous Waste Division has implemented a strong foundation for its regulatory programs. Specifically, the division has comprehensive rules, a written enforcement strategy, training programs for new inspection staff, and "fact sheets" that help the regulated community understand hazardous waste regulations. Managers and inspectors participate in internal "enforcement forums" to improve the consistency of enforcement actions. Staff usually develop well documented inspection reports, and the division routinely notifies companies when violations are resolved. While many of these practices are required by federal

The division has a strong foundation for its regulatory programs.

12 There were about 40 staff added to the St. Paul office plus 10 new regional staff. Student workers, who are not reflected in the division's complement, accounted for 17 of the new positions.

13 According to PCA staff, Minnesota will be the first state in Region V and perhaps the nation to issue all of its permits. Although PCA has issued most initial TSD permits in a timely manner, the three permits reissued by PCA have been less timely. PCA issued each at least seven months after the existing permit expired. Seven TSD permits will expire in 1991.

or state law, we think the division deserves credit for establishing a sound regulatory structure.

Inspections

Typically, one to two central office enforcement staff conduct inspections, sometimes accompanied by county hazardous waste staff.[14] Hazardous Waste Division staff usually notify companies prior to inspections, except for inspections done in response to public complaints. Typical inspections take one to four hours at the site. Inspectors tour facilities and observe hazardous waste storage and labeling. In addition, inspectors review company waste shipping records and employee training programs. For the most part, the intent of PCA's inspections is *prevention* of hazardous waste releases. In contrast, it is extremely difficult for inspectors to detect and document the most serious hazardous waste violations, such as illegal dumping or sewage disposal of wastes.

To determine the frequency of on-site inspection for various types of regulated facilities, we analyzed data from the division's Hazardous Waste Information Management System (HWIMS). The HWIMS system includes codes for various types of inspections, such as full compliance inspections, followup inspections, and reviews of financial records. We limited our review to full compliance inspections because these represent virtually all of the comprehensive, on-site inspections done by staff. We found that most of the "followups" listed in the HWIMS system were not inspections at all, but merely dates on which PCA corresponded with companies after inspections.[15] Financial record reviews rarely require site visits and are done by permit staff, not enforcement staff.

According to EPA enforcement policy, states should conduct biennial inspections at facilities that treat or store hazardous waste, with annual inspections at government-owned and land disposal facilities.[16] We looked at the inspection history of the 34 TSD facilities issued permits before 1990 and found that:

- **PCA has inspected facilities that treat, store, or dispose of hazardous waste an average of once every 12.5 months since they received their permits.**

PCA's inspection frequencies meet federal standards.

The Minnesota facilities subject to EPA's annual inspection requirements have had inspections once every 9.5 months since they received their permits, and PCA inspected the other TSD facilities an average of once every 13 months. Thus, PCA's inspection frequency for the state's largest handlers of hazardous waste is well within federal standards. EPA relaxed its standards for 1991, allowing states to defer some annual inspections for facilities in com-

14 State law requires PCA hazardous waste staff and certain hazardous waste disposal facility operators to pass exams certifying knowledge of applicable regulations. PCA staff that have not yet passed their exams accompany senior staff on inspections.

15 Although most of the "followups" on the HWIMS database are not inspections, division staff do a considerable amount of followup work, as discussed later. For the purpose of totaling the division's number of on-site inspections, however, we did not include the followups listed in HWIMS.

16 U.S. Environmental Protection Agency, Office of Solid Waste and Emergency Response, *Agency Operating Guidelines: Fiscal Year 1990* (Washington, D.C., March 1989), 48-49.

pliance with regulations the previous year. However, PCA staff told us they intend to continue annual inspections at these facilities.

We also examined the number and type of inspections conducted by PCA staff at all types of companies during a recent year. Our review of information in the division's central database indicated that PCA hazardous waste staff conducted 137 comprehensive compliance inspections in 1989. Table 5.2 shows the type of facilities inspected during 1989. For regulatory purposes, EPA categorizes generators by the volume of waste they produce. We found that:

- **PCA meets EPA standards for the number of "large quantity generator" inspections conducted. PCA conducts minimal inspections of smaller generators, for which there are no EPA inspection frequency standards.**

The division did 137 comprehensive inspections in 1989.

Table 5.2: 1989 Compliance Inspections Conducted By Hazardous Waste Division

Type of Facility	Approximate Number of Facilities in State	Number of Inspections[a]
Treatment, storage, and disposal facilities	43	37
Twin Cities Metropolitan Area		
Large quantity generators	350	30
Small quantity generators	1,200	7
Very small quantity generators	3,300	5
Non-Metropolitan Area		
Large quantity generators	85	16
Small quantity generators	600	18
Very small quantity generators	2,500	11
Other or unknown[b]	____	13
Total	8,078	137

Source: Program Evaluation Division analysis of Hazardous Waste Information Management System (HWIMS) data.

[a]Full compliance inspections.
[b]The division conducted 10 inspections of "non-generators," nine of which were in the non-metropolitan area. There were also three inspections of unknown type.

EPA recommends that states annually inspect about seven percent of their "large quantity generators" (those generating more than 1,000 kilograms of waste per month). We found that PCA inspected 46 large quantity generators in 1989, which is about 10 percent of Minnesota's large quantity generators. In contrast, PCA inspected about one percent of "small quantity generators" (those generating between 100 and 1,000 kilograms per month), and one-third of one percent of companies generating less than 100 kilograms per month. Stated differently, at current inspection rates, PCA could inspect large quan-

tity generators once every 10 years, and smaller generators once every 100 to 300 years. As we mention later, it is likely that PCA will identify additional hazardous waste generators in the near future, so these inspection rates are probably optimistic.[17]

We also examined the geographic distribution of PCA hazardous waste generator inspections. All of PCA's inspection staff work out of the Hazardous Waste Division's St. Paul office. Each inspector works with companies in one of the Twin Cities metropolitan area counties and one PCA region outside the metropolitan area. According to PCA records, about 60 percent of Minnesota's 8,000 identified hazardous waste generators are in the Twin Cities metropolitan area. We found that:

- **In 1989, Hazardous Waste Division staff inspected a total of 42 generators from the Twin Cities metropolitan area and 45 from outside the metropolitan area.**

It is important to consider that each of the Twin Cities metropolitan area counties is required by law to operate its own hazardous waste inspection program, while no counties in other parts of Minnesota conduct routine hazardous waste inspections.[18] We surveyed metropolitan counties to determine the number of inspections they do annually. The seven counties reported a total of more than 2,000 on-site compliance inspections in 1989, including inspections of most large quantity generators. PCA and county staff told us that the scope of county and state inspections is similar. However, according to PCA staff, state inspections usually involve much more rigorous documentation and followup. In fact, PCA managers told us that inspection *followup* requires more of their staff's time than do inspections, while counties often do no followups after leaving copies of inspection reports with generators.[19]

In the Twin Cities area, both PCA and county staff conduct hazardous waste inspections.

Clearly, when counting both PCA and county inspections, hazardous waste generators in the Twin Cities metropolitan area receive more frequent inspections than generators elsewhere in Minnesota. Given the extensive inspection efforts by Twin Cities metropolitan area counties, it is worth asking whether PCA should focus its inspections on counties outside the metropolitan area. Most of the facilities subject to EPA standards for inspection frequency are in the metropolitan area.[20] If PCA were to ask metropolitan counties to conduct some of its EPA-required inspections, counties would have to meet EPA standards for inspection quality and documentation. We recommend that:

- **In future hazardous waste grant negotiations with EPA, PCA should determine whether county inspections of large quantity generators**

17 PCA staff believe they have identified most of the state's large quantity generators.

18 PCA receives inspection reports for many, but not all, of the inspections done by metropolitan counties. Our survey of metropolitan counties indicated that some submit all inspection reports to PCA, while others do not.

19 Three of the metropolitan counties have active criminal enforcement programs, but none have authority to issue administrative penalties. Counties sometimes refer cases to PCA for enforcement actions.

20 Three-fourths of both the TSDs and large quantity generators are located in the metropolitan area.

and certain TSDs could be counted toward EPA inspection requirements.

EPA staff told us they are willing to negotiate the recognition of county inspections in future PCA grants. To alleviate any EPA concerns about the quality and consistency of county inspections, PCA should make adequate training opportunities available to county inspectors. Hazardous waste staff from several metropolitan area counties told us they would like to see better PCA training and technical assistance for their inspectors. In order for this arrangement with counties to result in more inspections outside the metropolitan area, PCA would need to retain most or all of its present EPA grant. County staff we talked to said that, due to the similarity of PCA and county inspections, counties could probably meet EPA inspection requirements without additional funding. To improve county enforcement capabilities and reduce the number of cases referred by counties to PCA, the Legislature could consider granting counties authority to issue administrative penalties.

We also think PCA's Hazardous Waste Division should identify ways to increase the number of inspections done by its inspectors. We found that:

- **In 1989, PCA hazardous waste inspectors did an average of about 12 on-site, comprehensive inspections each.**[21]

Besides these "full" inspections, inspectors also do some more limited inspections and respond to public complaints.[22] Inspectors told us that they spend most of their time following up with companies after inspections: documenting inspection findings, taking enforcement actions, tracking company responses, and sometimes making return visits. Inspectors also spend considerable time preparing for inspections and PCA enforcement forums.

The division's existing staff should be able to conduct more inspections than they do now.

According to PCA, enforcement staff devoted the equivalent of 4.2 work-years solely to inspections in 1989.[23] Combined with our finding that PCA did 137 full inspections in 1989, this results in an average of about 33 inspections for each full-time-equivalent staff devoted solely to inspections—or less than three inspections per month. We think it is reasonable to expect more inspections.

If the Hazardous Waste Division hopes to significantly increase its oversight of small quantity generators, it will need either large staff increases or an increase in the number of inspections per staff. The division will never achieve satisfactory inspection coverage for the state's 8,000 generators unless its inspectors conduct more than 12 inspections per year. We recommend that:

- **The Hazardous Waste Division should develop a strategy for increasing the number of inspections per staff.**

21 We determined that the equivalent of about 12 staff did 137 inspections. The 12 staff did not include supervisors, PCB inspectors, criminal investigators, or training staff, although it did include three new staff that may have been receiving some training early in 1989.

22 The HWIMS data indicates that PCA conducted 61 complaint-related inspections in 1989, including 39 that were not done in conjunction with a comprehensive inspection.

23 PCA told us that 6.7 work-years were devoted to inspection followup and enforcement activities.

Locating more inspectors outside of the Twin Cities metropolitan area might improve inspection efficiency by reducing travel time. The Hazardous Waste Division is the only PCA division that does not have any inspection staff outside the Twin Cities area. Also, hazardous waste inspectors told us that they typically do more paperwork for inspections than county staff. We think division management should solicit staff suggestions for possible efficiencies and look for ways to increase the presence of staff in the field.[24]

Violations and Enforcement Actions

Staff find violations in more than 60 percent of inspections.

EPA classifies hazardous waste violations as "Class I" (serious) and "Class II" (less serious). Figure 5.4 shows EPA's definition of each. For the 137 comprehensive inspections conducted by PCA in 1989,

- **PCA found Class I violations in 30 percent of its inspections, sometimes in combination with lesser violations. PCA found Class II violations in another 34 percent of inspections.**

Figure 5.4: Federal Definitions of Class I and Class II Violations

Class I violations are deviations from regulations, compliance orders, consent decrees, or permit conditions which could result in a failure to:
(a) assure that waste goes to authorized TSDs,
(b) prevent releases of hazardous waste,
(c) assure early detection of hazardous waste releases, or
(d) perform emergency cleanup or other corrective action for releases.

Class II violations are violations of RCRA regulations that do not meet the Class I violation criteria.

Source: EPA Enforcement Response Policy, (Washington, D.C., December 1987), 4-5.

The largest category of Class I violations was improper waste storage. Examples of storage violations include storing wastes in open containers, or storing waste outdoors in containers resting on bare ground.

When Hazardous Waste Division staff find violations, they have several enforcement options. In addition to the options available to other PCA divisions, such as enforcement letters, notices of violation, and stipulation agreements, the Hazardous Waste Division has some additional options. The most noteworthy is authority to issue administrative penalties. The 1987 Legislature authorized the PCA commissioner to issue administrative penalties up to $10,000 dollars for hazardous waste violations. As shown in Table 5.3, administrative penalties have largely replaced notices of violation as the division's preferred enforcement option. State law requires PCA to forgive

24 The division recently added two staff to its regional offices. Their primary function is to identify unregulated generators, not to conduct comprehensive inspections and follow up on violations. Thus, these staff will increase the division's enforcement presence, but will probably not noticeably increase the number of inspections done.

Table 5.3: Types of Enforcement Actions Taken by the Hazardous Waste Division, 1987-90

	1987	1988	1989	1990[a]
Notices of violation (NOVs)[b]	46	23	12	21
Administrative penalties	0	8	25	45
Stipulation agreements	10	6	6[c]	7
Penalties assessed, including penalties later forgiven	$293,854	$118,602	$318,320[d]	$299,685

Source: PCA Hazardous Waste Division (NOV data is from the division's September Hazardous Waste Work Plan report for each year).

[a]January through July 1990 only, except for notices of violation which reflect 12 months of data.
[b]NOV data are for federal fiscal years (October to September). Other data are for calendar years.
[c]Does not include 14 "stipulation of dismissal agreements" that resulted from settlement of a civil lawsuit involving companies in the electronic circuits industry.
[d]Does not include a $1.5 million penalty issued jointly with the Air Quality Division because most of the violations were air quality violations. Also, this was the first year in which a large portion of the assessed penalties (about $80,000) were forgivable penalties.

less serious penalties if the violator takes appropriate steps to correct the problem. Of the administrative penalties issued between January 1987 and July 1990, 50 were forgivable penalties, 7 were nonforgivable, and 12 combined forgivable and nonforgivable penalties. The median nonforgivable penalty was $1,750.

We examined how much time it takes PCA to return violating companies to compliance with hazardous waste regulations. EPA has adopted some general guidelines for state enforcement agencies. Within 45 days of an inspection, states should determine whether the inspection uncovered violations. Following this determination, EPA wants states to return violators to compliance within 90 to 120 days, when possible. We reviewed PCA's 1989 inspection data and found that:

- **PCA usually returns minor violators to compliance quickly, but there is room for improvement among more serious violators.**

It often takes over a year to resolve serious violations.

Among companies with serious (Class I) violations that returned to compliance in 1989, the median time from initial inspection to final compliance was nine months. Among companies with less serious (Class II) violations that returned to compliance in 1989, the median time from initial inspection to final compliance was three months.

During our review, we also found many instances in which companies with Class I violations were inspected during 1989 but not returned to compliance in that year. Of the companies that had unresolved violations at the end of 1989, a median of 17 months had passed from the time of the inspection that documented the violation.[25]

25 According to EPA data, Minnesota exceeded EPA time standards for returning the most common type of violators (called "medium priority violators") to compliance 23 percent of the time between January 1989 and August 1990. This was higher than four of the other five states in EPA Region V.

As noted earlier, the Hazardous Waste Division has a unique enforcement tool, the administrative penalty order. The Legislature granted the division administrative penalty authority to make the enforcement process faster and more effective. We wanted to know whether these penalties have brought violators into compliance in a timely manner. We examined all cases in which PCA issued administrative penalties between January 1989 and March 1990. PCA issued 30 of its 36 penalties during this time to companies with serious (Class I) violations. We found that:

- **It took PCA a median of nearly three months from the time of inspection to issue administrative penalty orders.**

- **Once PCA issued the administrative penalty orders, the companies returned to compliance fairly quickly (a median of 2.25 months).**[26]

Administrative penalties have not been issued as quickly as some people expected.

When the Legislature authorized administrative penalties, some people expected the Division to issue them routinely, like traffic tickets. This has not been the case. There are several reasons why it takes so long for PCA to issue administrative penalties. First, division managers told us they require their staff to document violations subject to administrative penalties more rigorously than lesser violations. Second, before issuing an administrative penalty order, the division gives companies an opportunity to respond in writing to the alleged violations. Third, the division does not yet have comprehensive policies on the types of penalties that should apply to various types of violations. Thus, decisions about whether to issue a penalty order, and whether the order should be forgivable, are now made on a case by case basis following extensive internal discussions. Finally, it is not unusual for administrative penalty orders to be reviewed by four or five staff in PCA and the Attorney General's Office prior to issuance, and staff told us that these reviews are not always prompt.

Division managers told us that their goal is to issue most penalty orders within 30 days of inspections. We commend the division for their cautious and prudent use of administrative penalties since 1987, but we also recommend:

- **Hazardous Waste Division management should take necessary steps to ensure more timely issuance of administrative penalty orders. For example, the division should develop explicit guidelines on the circumstances that justify various types of enforcement actions.**

In December 1990, division managers issued a memo to staff listing "target time frames" for various types of enforcement actions. We think this is a step toward more timely enforcement.

Although PCA takes a long time to issue penalty orders, the results have been good. The time required to return serious violators to compliance using administrative penalty orders appears to be shorter than the time required when using other enforcement techniques. Most penalties have been small or for-

26 We excluded two cases in which companies went bankrupt, and one in which PCA followed the order with a stipulation agreement.

given, but the potential for a monetary penalty makes the administrative penalty a stronger enforcement tool than a notice of violation. Also, penalty orders appear to be accepted by regulated facilities, as shown by the fact that only two orders have been appealed to administrative law judges so far, and there have been no district court appeals.[27]

EPA staff believe PCA operates a strong program.

In general, EPA assessments of Minnesota's hazardous waste enforcement programs have been very positive. In 1989 and 1990, EPA rated PCA's program "satisfactory" in all areas.[28] For the purpose of reviewing the quality of state inspections, EPA accompanies PCA staff on five to seven inspections each year. We reviewed EPA summaries of these inspections for three recent years and found that EPA is very satisfied with the quality of PCA's inspections. EPA staff told us that PCA could issue enforcement actions more quickly, and suggested that authority to issue higher penalties would also improve the efficiency of enforcement. They complimented the quality and commitment of PCA's staff, and said Minnesota has more comprehensive rules than most states.

"Cradle to Grave" Hazardous Waste Tracking

One of the goals of federal hazardous waste laws is to fully account for hazardous waste from the time of generation to the time of treatment, storage, or disposal. Generators are responsible for their wastes until delivery to a permitted TSD facility. The primary mechanism for hazardous waste tracking is the "manifest," a document completed each time hazardous waste is transported. The manifest documents waste type, quantity, and destination. Figure 5.5 summarizes the manifest process for different types of shipments.

Figure 5.5: Hazardous Waste Manifest Process for In-State and Out-of-State Shipments

For waste generated in Minnesota and sent to a Minnesota TSD: Generators fill out Minnesota's manifest. Generators send copy to PCA within 5 days of shipment, keep another copy, and give additional copies to the transporter. When the waste reaches the TSD, the TSD sends one copy to the generator and one to PCA.

For waste generated in Minnesota and sent out of state: Generators fill out the receiving state's manifest. The generator must send PCA photocopies of the original manifest (signed by the generator and transporter) and the manifest signed by the TSD.

27 PCA won both appeals. The lack of appeals may also reflect the relatively small penalties that have been issued and the thoroughness of PCA's documentation.

28 "Satisfactory" is the highest rating given by EPA. We reviewed EPA's 1990 mid-year evaluations of all EPA Region V states. Illinois and Michigan also received satisfactory ratings for their entire programs. In contrast, EPA has been running the hazardous waste inspection program in Indiana because of serious deficiencies, and several states have more serious staff turnover problems than Minnesota.

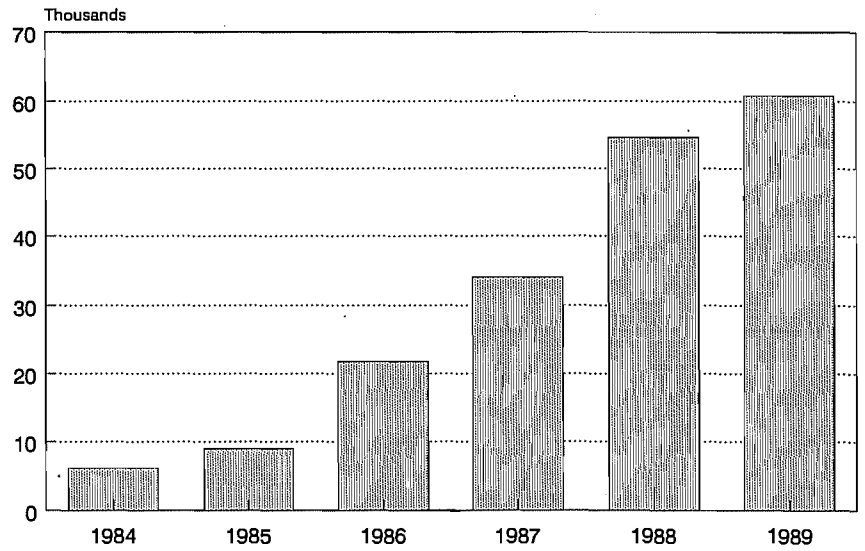
If used effectively, manifests can help detect and deter illegal waste disposal.

Manifests can help detect and deter illegal disposal of wastes, particularly by transporters. Generators are supposed to receive copies of manifests from TSD facilities, indicating that waste arrived at its intended destination. State rules require generators that do not receive copies of the TSD manifest to file "exception reports" with PCA. PCA enforcement staff told us they recall only one or two instances in which they have received an exception report from generators. This either indicates that all wastes are reaching their intended destination, or companies are not making an effort to match TSD manifests with their own.

As an independent check on hazardous waste shipments, state rules require that generators and TSD facilities submit manifest copies to PCA. Figure 5.6 shows the number of manifests submitted to PCA in recent years. Division staff enter information from all manifests into an automated database. We found that:

- **PCA has not used its computer system to systematically match generator and TSD manifests.**

Figure 5.6: Number of Waste Shipments for Which PCA Received Manifests



Source: PCA Hazardous Waste Division

Presently, PCA staff screen all manifests manually to determine if they contain required information. In the past two years, PCA has significantly increased its number of manifest-related enforcement actions.[29] However, according to staff, most of PCA's manifest-related enforcement efforts have involved procedural problems, such as manifests without signatures or EPA identification numbers, rather than missing manifests.

29 PCA issued 31 administrative penalty orders for manifest violations in the first seven months of 1990, compared to 16 for all of 1989. In 1990, PCA also entered stipulation agreements with Minnesota's two largest hazardous waste transporters.

The experience of some other states suggests that systematic matching of generator and TSD manifests is feasible and worthwhile. For example, Illinois has matched manifests for many years, and it detected more than 10,000 missing generator manifests in 1988.[30] During the first 11 months that California matched manifests, it found 31,000 unmatched manifests out of 121,000 received.[31] States also use their computer systems to determine whether companies submitted manifests within the time frames required by federal law.

PCA should make stronger efforts to identify "missing" manifests.

A particular area of concern is wastes shipped by Minnesota generators to TSD facilities outside the state. Minnesota generators export about 70 percent of their hazardous waste to other states. According to Minnesota rules, it is the responsibility of Minnesota generators to have out-of-state TSD facilities complete a copy of the manifest and return it to PCA within 40 days.[32] However, enforcement staff told us that many—perhaps most—out-of-state TSD facilities do not send manifests to PCA.

We think PCA should more effectively use its computerized manifest system to detect "missing" manifests. Missing manifests may indicate improper disposal of hazardous wastes or honest mistakes. In either case, PCA should better understand the extent of manifest problems and expect better reporting. We recommend:

- **PCA should develop computer programs that help detect missing or late manifests. Where appropriate, PCA should develop thresholds for the number or extent of violations that will trigger enforcement action.**

Division managers told us that this type of programming is feasible and in the division's plans, but has had lower priority than some other programming tasks.

Because so many of Minnesota's generators ship hazardous waste out of state, PCA should take necessary steps to improve manifest submissions by out-of-state TSDs. We recommend that:

- **PCA should hold generators more accountable when out-of-state TSDs do not submit manifests. In certain cases, PCA should work with regulatory agencies in other states or with out-of-state TSDs themselves to encourage proper reporting.**

At a later date, PCA may wish to consider additional safeguards against illegal disposal of hazardous waste. For example, because generators often give transporters payments for both transportation and disposal, transporters may have an incentive to forge manifests and dump waste. To guard against forged manifests by transporters, PCA could require that generators have separate

30 Illinois Office of the Auditor General, *Management Audit of the Illinois Environmental Protection Agency's Hazardous Waste Program* (Springfield, May 1989), 10. The audit found that Illinois did little followup on the violators detected.

31 U.S. General Accounting Office, *Illegal Disposal of Hazardous Waste: Difficult to Detect or Deter* (Washington, D.C., February 22, 1985), 45.

32 *Minn. Rules* Ch. 7045.0265, Subp. 4.

contracts with transporters and TSDs. In addition, some states have tried to detect manifest forgeries by comparing manifests with the TSD facilities' annual reports of waste received from each generator.

LEAKING STORAGE TANKS AND PIPELINES

Thousands of Minnesota businesses store hazardous materials, primarily gasoline and petroleum products, in underground tanks. Most of these tanks are made of bare steel, which corrodes over time. Tank leaks and spills are also caused by inadequate piping, installation mistakes, and filling tanks carelessly. This section discusses PCA's role in the cleanup of leaking storage tanks and pipelines. Because cleanups are closely tied to state funding mechanisms, we also discuss Minnesota's Petroleum Tank Release Cleanup Account (commonly known as the "Petrofund"), which is administered by the Department of Commerce, and the Petroleum Tank Release Compensation Board (commonly called the "Petroboard").

Storage Tanks

In 1984, Congress amended the Resource Conservation and Recovery Act (RCRA) to include regulations for underground storage tanks. As of December 1988, new underground storage tanks must be made from or coated with corrosion-resistant materials. New tanks must also have equipment to detect leaks and prevent overfills. EPA regulations specify a timetable for existing tanks to meet these requirements, shown in Figure 5.7. By 1998, all new and existing tanks must meet identical requirements.

By 1998, all storage tanks must meet new federal requirements.

Figure 5.7: Deadlines for EPA Storage Tank Requirements

	Deadlines for:		
	Leak Detection Monitoring	Corrosion Protection	Spill and Overflow Prevention Equipment
Existing Tanks*			
25 + years (or unknown age)	December 1989	December 1998	December 1998
20-24 years	December 1990	December 1998	December 1998
15-19 years	December 1991	December 1998	December 1998
10-14 years	December 1992	December 1998	December 1998
Under 10 years	December 1993	December 1998	December 1998
New Tanks	At installation	At installation	At installation

Source: U.S. Environmental Protection Agency.

*"Existing" tanks are those installed before December 1988.

PCA staff estimate that 60 percent of the state's underground tanks may have experienced leaks or spills. Federal regulations require most tank owners to demonstrate an ability to pay for up to $1 million in damages from leaks. But given the susceptibility of tanks to leaks, owners have had great difficulty finding private tank insurance. To minimize the environmental threat from leaks, Congress established a trust fund to pay for cleanups in cases where (1) the tank owner cannot be found or is unwilling to comply with a cleanup order, (2) prompt action is necessary to protect human health and the environment, or (3) the cleanup costs exceed the amounts for which the owner is legally responsible. In general, however, Congress wanted tank owners and operators to pay for cleanups of tank leaks.[33]

Minnesota's Petrofund pays for many cleanups that the federal tank fund does not.

Minnesota's Petrofund has broader applications than the federal trust fund. The Petrofund acts as an insurance program for tank owners and may reimburse them for 90 percent of "corrective action" costs. In contrast to the federal tank program, the Petrofund reimburses most types of tank leaks, regardless of size or cause.[34] In addition, the Petrofund covers fuel oil and aboveground tanks, which are not covered by the federal trust fund.[35]

For the most part, PCA staff act as "case managers" for cleanups of reported leaks. Typically, a tank owner or operator hires a consultant to prepare site investigation reports and corrective action plans. To receive reimbursement for these costs, a responsible party must provide the Petroboard with proof that PCA has approved a corrective action plan for the site. To receive reimbursement for cleanup costs, the responsible party must demonstrate that cleanup is consistent with the approved corrective action plan. In cases where there is no clear responsible party, or where the responsible party refuses to cooperate, PCA hires its own consultants to conduct site investigations and cleanups. According to staff, PCA eventually finds and bills the responsible party for cleanup costs in more than half of these cases.

As noted earlier, PCA's increase of 50 storage tank staff in the past three years was larger than the increases in any other PCA program. Still, staff have had a difficult time keeping up with the number of leaks reported, and:

- **The backlog of leak cases is growing rapidly.**

From 1987 to 1990, the number of leaks reported to PCA outnumbered the number of cases closed by five to one. For 1990 alone (through November), PCA opened 1,333 cases while closing 420. Figure 5.8 shows the recent trend in case openings and closings. Division managers believe that internal changes in the past year have resulted in increased staff efficiency, although the division was still opening more than twice as many cases as it closed in late 1990. With about 3,000 open cases presently, program administrators told us it is not unusual for a PCA pollution control specialist to handle 150 to 200

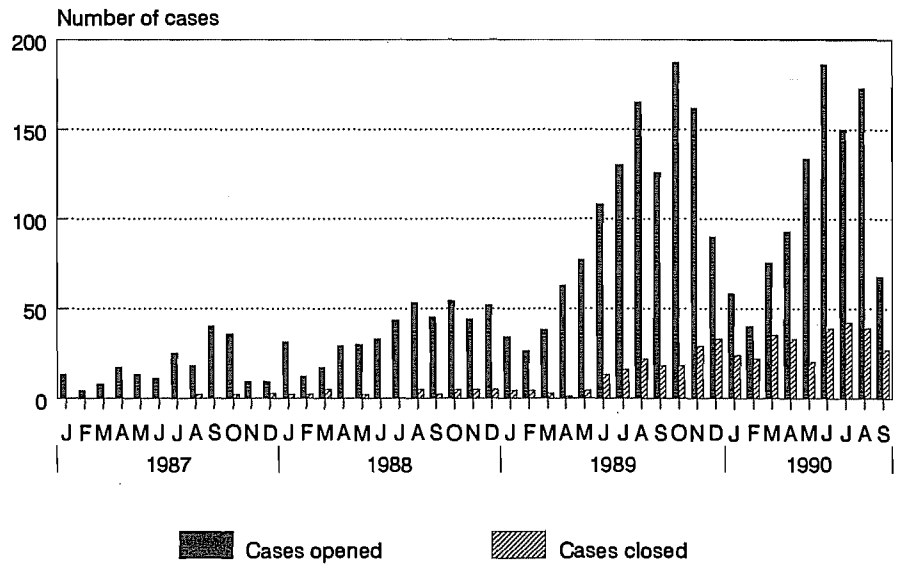
33 U.S. General Accounting Office, *Insuring Underground Petroleum Tanks*, (Washington, D.C., January 1988), 12.

34 There is a $1 million upper limit on reimbursement per leak, but staff told us that no reimbursements have exceeded $400,000.

35 Fuel oil and aboveground tanks represent about one-fourth of Minnesota's tanks.

PCA has been opening more leak cases than it has been closing.

Figure 5.8: Tank Leak Cases Opened And Closed Monthly By PCA, 1987-90



SOURCE: PCA Hazardous Waste Division

cases. Supervisors assign staff hydrologists to work with pollution control specialists in more than half of the cases.

We reviewed the files for 25 completed cleanups and found that the median time for cleanup was six months. Cold weather sometimes delayed excavation and soil treatment, so the cleanup times appeared to be reasonable. Cleanups took longer in cases requiring ongoing ground water remediation and monitoring.

According to PCA files, most leaks were discovered during the process of removing tanks. Typically, cleanup included removal of some contaminated soil. In the cleanups we reviewed, responsible parties removed a median of about 30 cubic yards of soil.[36] Typically, contaminated soils were incinerated or thinly spread over topsoil.[37] Most incinerated soils are incorporated into asphalt. Our file review indicated that most leak sites were cleaned up to PCA's specifications, but in 8 of the 25 cases we found insufficient cleanup documentation.[38]

The Petrofund has paid for more than $16 million in tank cleanups since its creation by the Legislature in 1987. Table 5.4 shows the types of expenditures

36 In 5 of the 25 cases, we could not determine the amount of soil removed. The largest amount of soil excavated was 530 cubic yards.

37 When soils are "land spread," biological processes break down contaminants over time.

38 These eight files did not fully document the treatment or disposition of contaminated soils. PCA staff told us they have made recent efforts to improve documentation.

Table 5.4: Types of Expenditures Reimbursed by the Petrofund, 1987-90 (through July 1990)

Cost Category	Reimbursements
Emergency response	$ 67,845
Temporary hazard control measures	114,289
Site investigation	3,614,653
Preparation of corrective action plan	837,844
Cleanup	7,171,041
Tank removal	1,167,437
	$12,973,109

Source: Minnesota Department of Commerce.

The future Petrofund liability of leaks reported to date is substantial.

that have been reimbursed. About 80 percent of the leaks reported to PCA since 1987 have not been fully cleaned up, so it is likely that reimbursements from these cases alone will increase program expenditures dramatically. Responsible parties may apply for Petrofund reimbursement any time after PCA approves a corrective action plan, and there are many of the 600 "closed" cases in which parties have not yet applied for reimbursement.[39] Actually, cases are not formally "closed" following reimbursement, and responsible parties at cleaned-up sites have sometimes applied for and received supplemental reimbursements following changes in reimbursement policies.[40] PCA and Department of Commerce staff told us they have no way of estimating the future liability of the Petrofund for the cases that have been opened to date. According to Petrofund staff, the average reimbursement for a cleanup is about $40,000. Using this average, the total cost of cleaning up the 3,000 cases now open could exceed $100 million.

We have two primary concerns with PCA's programs for leaking storage tanks. First,

- **Relative to other PCA programs, the amounts of staff and resources devoted to leaking storage tanks probably are not justified solely by the environmental threats posed. Rather, the tanks program has grown largely because of the availability of dedicated federal and state funding and the Legislature's desire to help businesses with large, unanticipated costs.**

PCA managers concur that tank leaks, in general, are probably not among the most serious types of pollution addressed by the agency, although many individual leaks pose significant environmental problems. As noted earlier, our random review of tank files indicated that many petroleum releases are small

39 Of the 25 closed cases we examined, responsible parties have submitted only 11 reimbursement requests to the Petrofund so far.

40 For example, after the Legislature raised the maximum reimbursement from $100,000 to $250,000, some responsible parties subject to the earlier limit received additional reimbursement under the new limit.

Although many tank leaks pose environmental threats, the overall risk posed by tank leaks is probably smaller than that posed by other environmental problems.

and require minimal soil excavation. PCA staff recently reviewed a sample of 200 leak cases and estimated that 43 percent involved some ground water contamination, and 57 percent did not.[41] Of the 3,500 tank leaks reported to PCA, there have been 56 cases in which the commissioner has declared drinking water or explosive vapor emergencies. More generally, EPA conducted a comparative study of environmental problems in 1987 and concluded that the risks of storage tank releases are relatively low. EPA studied the cancer and non-cancer health risks, ecological effects, and effects on public welfare of various pollution problems. In each of these categories, EPA concluded that storage tank releases pose "relatively low risk."[42] In sum, there are certainly many tank leaks that pose environmental threats. However, if PCA allocated staff to programs based solely on environmental risk, the leaking storage tank program would probably be smaller than it now is. The growth of PCA's tanks program has been driven by federal deadlines for storage tank upgrading, federal and state funding, and public demand.

In addition, we think the leaking storage tank program lacks adequate incentives for cost control. This is of particular concern given the statutory provisions for virtually unlimited program funding.[43] Some examples of inadequate cost controls include the following:

- **State agency staff often do not scrutinize the reasonableness of cleanup costs.**

State rules require the Petroboard to "determine the amount of the reimbursement based on those costs it finds are eligible, actually incurred, and reasonable."[44] The Petroboard has one staff person who reviews applications for reimbursement. This person determines whether cleanup costs meet the eligible reimbursement categories in state rules. However, the increasing number of tank cleanup cases submitted for Petrofund reimbursement has overwhelmed Department of Commerce staff and left little time for reviewing the reasonableness of costs. According to state rules, it is the responsibility of applicants for Petrofund reimbursement to prove the reasonableness of their expenses if so requested by Department of Commerce staff. Applicants can demonstrate "reasonableness" by showing that competitive bids were solicited, that the costs were comparable to those charged by other vendors in the geographic area, or that only one party was available or qualified to do the work. Department of Commerce staff rarely request such demonstrations of

41 We found no clear indication of threats to ground water in 25 of the 35 open and closed files we reviewed.

42 U.S. Environmental Protection Agency, *Unfinished Business: A Comparative Assessment of Environmental Problems* (Washington, D.C., February 1987), 82. EPA acknowledged that its estimate of less than one U.S. cancer death annually from storage tanks might be low because it used a different estimation method for storage tanks than for some other pollution problems.

43 As noted earlier, the fee on petroleum distributors takes effect whenever the Petrofund falls below $2 million. It is likely that consumers ultimately bear the burden for much of this fee, so it is important for this fee to receive the scrutiny that general taxes receive.

44 *Minn. Rules* Ch. 2890.0100, Subp. 3.

reasonableness and, as discussed below, lack other standards for scrutinizing costs. As a result, the Petroboard has never rejected an application for reimbursement on the basis of "reasonableness."[45]

In addition,

- **State rules defining "reasonable costs" are vague.**

There are no state rules or guidelines for reasonable unit costs, such as the hourly rates charged by consultants or the cost of land-spreading contaminated soil.[46] In addition, state rules indicate that responsible parties can demonstrate the reasonableness of their costs if they show that only one vendor was "reasonably available" or "reasonably qualified" to do the work. The rules do not define these terms, and state staff told us that there are many qualified consulting and cleanup vendors that provide their services statewide.

Petrofund cost controls are weak.

To better control costs, PCA staff believe that responsible parties should be encouraged more strongly to seek competitive bids. First, responsible parties could solicit bids from consultants for site investigations and development of cleanup plans. Second, once PCA approved a cleanup plan for a site, responsible parties could solicit bids for excavation, transportation, and disposal of contaminated soil, as well as some other remediation activities. The feasibility of such a procedure is demonstrated by the fact that PCA presently solicits competitive bids in those cleanups where a responsible party has not been identified.[47]

A final example of minimal cost controls in the Petrofund program is that:

- **Responsible parties bear only a small portion of cleanup costs.**

In the federal underground storage tank and superfund cleanup programs, public funds usually are not used in cases with an identified responsible party. In contrast, Minnesota's Petrofund program operates like an insurance program and pays for 90 percent of costs, regardless of responsibility. To a large extent, the minimal costs charged to responsible parties reflect the Legislature's goals of (1) easing the burden of unanticipated cleanups on small businesses, and (2) encouraging rapid cleanups through strong financial incentives. There is no "deductible" in Minnesota's program, so even the smallest leaks are eligible for reimbursement. In fact, due to a deficiency in state rules, the Petrofund can even pay cleanup costs to companies covered by private insurance.[48] The Petroboard has proposed rule revisions, but legislative action could also address this problem.

---

45 The Petroboard has, on the other hand, reduced reimbursements to responsible parties who failed to cooperate with PCA, report releases promptly, or operate tanks in compliance with rules.

46 Department of Commerce staff looked at consultants' hourly rates last year and found relatively small variations, but they told us that the hours charged by consultants vary considerably.

47 There may be some practical problems using competitive bids to select consultants for remedial investigations since the scope of such investigations is difficult to predict prior to site visits.

48 The Minnesota Court of Appeals ruled in July 1990 that the Petrofund cannot deny reimbursement to a responsible party covered by tank insurance until state rules authorize such a denial. *In re* Crown Coco, Inc., 458 NW 2d 132 (Minn. Ct. App. 1990).

Overall, we think it is time to reappraise state programs for leaking storage tanks. The availability of state and federal funds with minimal restrictions encouraged extensive cleanup during the past three years and removed a large financial burden from small businesses. On the other hand, there has been little scrutiny of these "off-budget" expenditures, and Minnesota has devoted a large portion of its pollution control staff to a problem with lower risk than many other environmental problems. We recommend:

It is time to reappraise state programs for leaking storage tanks.

- **The Legislature should consider enacting a sunset provision for the current Petrofund program, effective in the year 2000. If the Legislature wishes to continue a more limited Petrofund program after this time, we recommend a program of loans rather than grants.**

By December 1998, all tanks must be designed to resist corrosion, the main cause of tank leaks. Following this date, it is reasonable to expect tank owners to accept responsibility for the condition of their tanks. Establishing the 2000 sunset now will give tank owners several years to correct existing tank problems with state assistance. If private tank insurance remains unavailable in 2000, the Legislature could maintain the Petrofund as a source of long-term loans for tank cleanups. We also recommend:

- **The Petroboard should adopt rules requiring responsible parties to seek competitive bids for tank cleanups. (Presently, responsible parties are not required to seek bids, but may use bids to demonstrate the reasonableness of their applications for cost reimbursement.) Petroboard rules should allow very limited exceptions to this requirement and require responsible parties to document reasons for not seeking bids.**

- **The Petroboard, with assistance from PCA and Department of Commerce staff, should develop rules or guidelines for "reasonable" unit costs for leak investigations and cleanups. The Legislature should consider funding at least one additional Department of Commerce staff person from the Petrofund to scrutinize costs for which companies are seeking reimbursement.**

- **The Legislature should prohibit responsible parties that have been reimbursed for actions at a leak site from seeking supplemental reimbursements for these same actions at a later date.**[49]

- **The Legislature should prohibit the Petroboard from reimbursing costs that are covered by private insurance.**

The number of leaks now being reported has overwhelmed PCA and Department of Commerce staff. The Legislature has succeeded in providing tank owners with financial incentives to report and clean up leaks, but at significant cost to the public and with minimal cost controls. The increased reimburse-

49 The effect of this recommendation would be to prevent tank owners from getting supplemental reimbursements as a result of changes in reimbursement laws or rules. An example of this practice is provided in footnote 40.

ment restrictions and staff oversight recommended above can help address this problem, but the Legislature should also consider *incentives* to encourage greater financial accountability. One way to do this, as recommended earlier, would be to change the Petrofund program from a grant to a loan program at a future date. Given the rapid increase in Petrofund reimbursements, the Legislature may wish to consider changing the present grant program to a loan program even before the year 2000. Long-term loans would provide financial assistance to businesses with large unexpected costs, while at the same time providing them with stronger incentives to control costs. As an additional incentive for cost control, we recommend:

- **The Legislature should consider reducing the percentage of costs paid for by the Petrofund (now 90 percent), or requiring a deductible for tank reimbursements.**[50]

Pipeline Leaks

PCA has a four-person "spills team" that handles reports of about 1,300 nontank spills and environmental emergencies each year. For example, the team handles reports of truck, train, and plane accidents, abandoned wastes, fires, and vandalism. Typically, the team oversees cleanups done by the responsible party or refers cases to the Petrofund or superfund programs for cleanup and long-term followup. We did not look at a random sample of spills cases, but instead chose to look at one category of hazardous waste releases: pipeline leaks.

PCA receives reports of about 1,300 nontank spills and environmental emergencies a year.

Underground pipelines connect Minnesota refineries with out-of-state crude oil sources and in-state terminals. The pipeline that ruptured and exploded in Mounds View in 1986 focused public attention on the need for safe construction and operation of pipelines. According to PCA data, Minnesota pipeline leaks and ruptures have caused the release of more than nine million gallons of petroleum products in the past 25 years.

State responsibilities for regulating pipelines are shared by the Department of Public Safety and PCA. The Department of Public Safety's Office of Pipeline Safety ensures proper pipeline construction and maintenance through inspections and reviews of records. If pipeline leaks, spills, or other releases occur, PCA oversees the cleanup process. To evaluate PCA's role in the cleanup process, we examined a sample of cleanup files. We found that:

- **PCA maintains inadequate records of pipeline leaks.**

Initially, we used a PCA listing of recent pipeline leaks to draw a random sample of five leaks that occurred between 1984 and 1987.[51] PCA staff were unable to locate files for two of the cases, including a spill of 11,000 gallons in Polk County. Because of problems locating files from our random sample, we

50 State law provided for a $10,000 deductible until two years ago.

51 We selected our sample from leaks listed in PCA Division of Water Quality, "Hazardous Liquid Pipeline Failures Reported to the Minnesota Pollution Control Agency," (St. Paul, April 20, 1987).

then obtained a list of five large pipeline leaks singled out by PCA staff for their environmental impact. Staff were unable to locate files for one of these spills. Following our inquiries, a supervisor in the division assigned an intern to review PCA's pipeline files and document cleanup status. For 70 leaks recorded since January 1985, PCA staff found evidence of some cleanup in just 39. During this time, there were six leaks of more than 10,000 gallons for which PCA had no record of cleanup.

As with most storage tank leaks, reports of pipeline leaks usually are made to the Hazardous Waste Division's four-person spills and emergency response team. Our file review showed that these PCA staff usually played an active role in the weeks following pipeline spills, helping with initial cleanup and containment. However,

- **There is not enough long-term PCA followup for pipeline leaks.**

Unlike most releases reported to the spills team, pipeline leaks are not referred by the spills team to other PCA staff. This is because there are no programs with funding or jurisdication for pipeline incidents. Thus, the spills team does what followup it can, but has less than six staff months per year available for pipeline leak followup.

There are no programs with funding or clear jurisdiction for pipeline cleanup oversight.

Several of the pipeline leak files contained little recent correspondence despite initial requirements for monitoring or cleanup. For example, we reviewed files for a 1988 spill in Washington County of 750,000 gallons of crude oil caused by a seam failure in a pipeline. PCA staff played a very active role in the initial cleanup, and most of the oil was recovered within two months. However, we found little correspondence related to subsequent activities, such as ground water monitoring and site restoration.[52] PCA's inadequate documentation makes it difficult to determine whether appropriate cleanups have been conducted.

Although PCA managers told us that pipeline spills often pose greater environmental threats than storage tank leaks or superfund sites, they noted that PCA has lacked a clear funding source for oversight of pipeline leaks. We recommend that:

- **The Legislature should authorize the state Petrofund to pay for PCA staff oversight of pipeline leaks.**

Alternatively, staff for followup could be financed by the fees that pipeline companies pay to the state Office of Pipeline Safety. If the Legislature decides that oversight of pipeline leaks should be funded from the Petrofund, it should ensure that funding will continue after any future sunsets or limits on the leaking storage tank cleanup program.

52 The most recent correspondence we found between PCA and the consultant doing the cleanup was 18 months old.

OTHER ISSUES

We examined two other topics related to hazardous waste regulation. First, we looked at PCA's efforts to identify generators subject to federal and state regulations. Second, we examined the unique role played by metropolitan counties in hazardous waste regulation and surveyed county staff about this role.

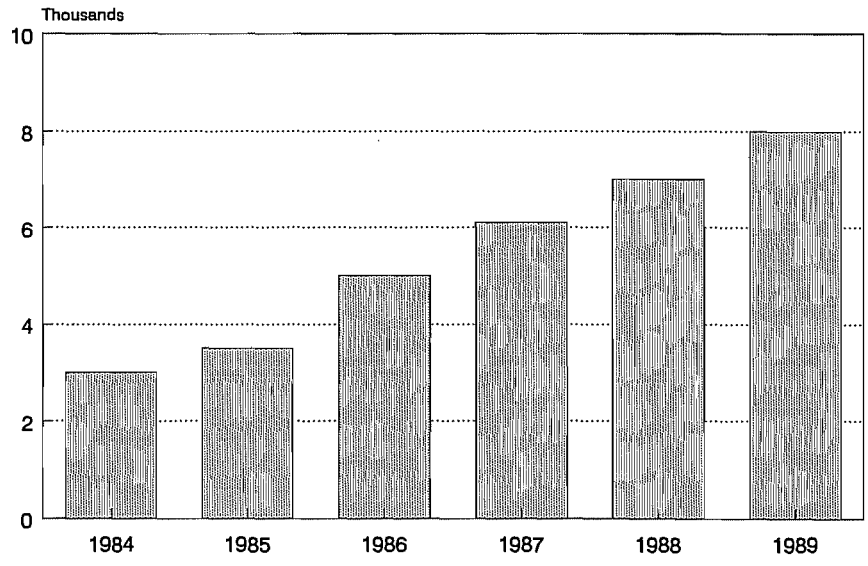
Hazardous Waste Generator Identification

Since 1980, PCA has required hazardous waste generators to disclose information on their waste streams. Federal rules require states to regulate generators of more than 100 kilograms of waste per year, but PCA also regulates smaller generators. Generators from outside the Twin Cities metropolitan area must file an initial disclosure with PCA that includes a waste management plan. They must also send PCA an annual report of any changes in amounts or types of wastes. PCA collects annual fees based on the volume of wastes reported. Generators in the Twin Cities area submit their disclosures and annual reports to counties, which then transmit summaries to PCA.

PCA has identified only one-third of the potential generators, despite diligent efforts.

A comprehensive hazardous waste regulatory program depends on identification of as many generators as possible. Figure 5.9 shows the number of known generators in recent years. Although the number of known generators (8,000) has more than doubled since 1984, PCA now estimates that there may be 30,000 generators in Minnesota (compared to a 1984 PCA estimate of 5,000). Recently, EPA expanded its definition of hazardous waste, which will

Figure 5.9: Number of Known Hazardous Waste Generators in Minnesota, 1984-89



Source: PCA Hazardous Waste Division

likely increase the number of generators further. Of the 8,000 identified generators, 60 percent are in the Twin Cities metropolitan area.[53]

We found that:

- **PCA has made extensive efforts to identify hazardous waste generators, despite having found less than one-third of the state's estimated total.**

Several years ago, PCA identified the standard industrial classifications (SICs) that contain likely generators of hazardous waste and purchased a mailing list of companies in these classifications. PCA contacted these companies to request waste disclosures. To find additional generators, PCA assigned a person to review phone directories and talk to city staff in northwestern Minnesota during 1989. PCA conducts eight informational workshops for hazardous waste generators each year and often publicizes the need for disclosure at industry conventions. In 1990, PCA initiated its largest generator identification effort yet. Using an expanded list of SIC codes, PCA identified 34,000 potential generators outside the Twin Cities area. Staff plan to simplify the disclosure process and solicit information from these companies. We think these efforts show a strong PCA commitment to identification of waste generators.

PCA could identify additional generators more efficiently by making better use of its computerized manifest information. Manifests provide information on companies that ship their wastes to treatment, storage, and disposal facilities, so it is important to systematically review manifests for previously-unidentified generators. PCA staff compare these lists manually now, but the task could be done more efficiently on computer.

Metropolitan County Hazardous Waste Programs

Counties and PCA have overlapping regulatory responsibilities.

State law requires each of the seven counties in the Twin Cities metropolitan area to operate a hazardous waste program. Together, these counties employ 25 to 30 hazardous waste staff. They spend most of their time identifying, "licensing," and inspecting hazardous waste generators.[54] State law gives PCA and metropolitan counties overlapping authority to enforce state hazardous waste regulations. EPA staff we talked with were not aware of any local governments with similar authority elsewhere in EPA Region V. As noted earlier, both PCA and county staff inspect generators in metropolitan counties, although counties conduct more inspections and PCA does more in-depth followup.

53 According to manifest information maintained by the Office of Waste Management, 59 percent of wastes shipped by Minnesota generators in 1989 originated in the seven-county Twin Cities area.

54 "Licensing" occurs when generators disclose information on their waste streams to the counties.

To help us assess how this unique regulatory arrangement has worked, we surveyed and interviewed staff from the metropolitan counties.[55] All of the counties reported good working relationships with PCA's hazardous waste staff. In recent years, PCA and county staff have held regular meetings to discuss common regulatory issues. Several of the counties said they appreciate the PCA staff's technical expertise and knowledge of hazardous waste rules. Staff from one county suggested that PCA compile its past interpretations of hazardous waste rules to encourage more consistency between state and county enforcement efforts.

Most counties said that PCA provides too little assistance to county enforcement and inspection staff, with several expressing an interest in PCA training and certification of county hazardous waste staff. County staff complimented PCA's use of administrative penalties and its assistance with county criminal investigations.

Staff from the metropolitan counties expressed particular concern with the "statewide generator program fees" collected by PCA. Each hazardous waste generator in Minnesota pays a fee surcharge equal to 68 percent of its annual hazardous waste fee. According to state law, this surcharge shall "reflect the agency's expenses in carrying out its statewide hazardous waste regulatory responsibilities." PCA managers told us that the fees pay for technical assistance, inspections, enforcement, and identification of new generators. Our survey indicated that:

- **Staff in most of the metropolitan counties do not believe that the statewide generator program fees collected by PCA in their counties approximate the value of services PCA provides.**

The metropolitan counties paid a total of $571,000 in statewide generator program fees to PCA during 1990, compared to $189,000 for nonmetropolitan counties. Thus, generators in the metropolitan counties are paying for three-fourths of PCA's "statewide" costs. However, many county staff do not think PCA has provided $571,000 worth of benefits to metropolitan counties and generators.

We did not try to independently document the amount of time spent by PCA staff on services in the metropolitan area, although we did find that PCA did about 45 full compliance inspections of generators in the Twin Cities area during 1989. PCA staff estimate that they spend about 14 staff-years annually providing services to or regulation of metropolitan generators, including: 5.8 staff-years of inspection, followup, and enforcement activities; 2.7 staff-years of rule writing; 2.2 staff-years of computer and data entry activities; 1.7 staff-years of supervisory time; and 1.7 staff-years of other activities. PCA staff noted that services such as statewide rule writing are not very visible, but they

55 Six of seven counties responded to our survey. We also interviewed staff from six counties (including the county that did not submit a survey response).

save counties the time and effort of having to develop their own hazardous waste ordinances.[56]

Given the degree of concern about fee levels expressed in our survey, PCA staff should make a point of discussing this issue with county staff in the near future and present their reasons for setting fees at current levels.

SUMMARY

Despite the recent development of hazardous waste regulation in Minnesota, we found a relatively comprehensive regulatory structure in place. The Hazardous Waste Division has worked extremely well with EPA, and its outreach and assistance to regulated facilities should be models for other PCA divisions. Although the division does not do as many inspections as we think it should, it has properly focused its inspection efforts on the largest handlers of hazardous waste. We also found that funding has driven some of the division's staffing priorities, resulting in large increases in a program for leaking storage tanks that often addresses relatively limited threats to human health and the environment, and inattention to long-term followup of large pipeline leaks. Our primary recommendations are:

- **The division should do more inspections outside of the Twin Cities metropolitan area, in part by encouraging EPA to recognize inspections done by metropolitan counties.**

- **The division should increase the number of inspections per enforcement staff person and should consider transferring some inspection responsibilities to regions outside the Twin Cities metropolitan area.**

- **Division managers should find ways to issue administrative penalties more quickly.**

- **The division should program its manifest computer system to more efficiently detect hazardous waste shipping violations.**

- **The Legislature and Petroboard should immediately place additional cost controls on storage tank cleanup reimbursements. The Legislature should consider replacing the Petrofund grant program with a loan program by the year 2000.**

- **The Legislature should authorize the state Petrofund to pay for PCA staff oversight of pipeline leaks.**

---

56 In contrast to its practices outside the Twin Cities area, PCA does not make significant efforts to identify unregulated generators in the metropolitan area. By mutual agreement, this task is left to counties. PCA does provide enforcement assistance to metropolitan counties.

DISCUSSION

Chapter 6

Most of our discussions in previous chapters have focused on issues related to particular PCA divisions. The purpose of this chapter is to integrate some of these findings and discuss some broader questions about PCA's approach to pollution regulation. We asked:

- **What management or policy issues pertain to more than one PCA division, and how should these be addressed?**
- **What is the appropriate scope of PCA's permit reviews?**
- **To what extent are market incentives a practical alternative to traditional approaches to pollution regulation?**

GENERAL OBSERVATIONS AND RECOMMENDATIONS

PCA is an agency with a difficult mission. It is expected to protect the environment, while at the same time avoiding unduly burdensome regulation. It is an agency that serves many "masters": the Environmental Protection Agency, the Governor, the Legislature, the PCA Board, and the citizens of the state. It regulates some pollutants for which there is little information on health and environmental risks. To a large extent, PCA's practices are dictated by federal rather than state regulations. Some people want PCA involved in decisions about facility siting, size, and production processes, while others want to limit PCA's role in environmental protection to ensuring that pollutants are not discharged at unsafe levels. In short, PCA operates in an environment with many constraints, little consensus, and very high stakes.

In previous chapters, we made recommendations regarding PCA's most fundamental responsibilities: monitoring, setting standards, issuing permits, enforcing pollution laws, and overseeing cleanup of polluted sites. Some of the problems we found were unique to individual PCA divisions. For example, unlike other divisions, the Air Quality Division has a permit system that does not encompass all of the polluters that should have permits. But we also found that many issues cross PCA division boundaries. In this section, we list our

recommendations to PCA and the Legislature resulting from these agency-wide problems.

1. PCA should do more to ensure ongoing compliance with pollution regulations.

Through the permitting process, PCA determines whether polluters are *capable* of meeting pollution regulations. This is commonly referred to as initial compliance, and it is sometimes determined by a single test of a company's pollution control equipment. However, once companies receive permits, it is equally important for regulators to monitor continuing compliance through inspections and reviews of data on actual emissions and discharges. Companies that are capable of complying with regulations can exceed pollution standards if they turn off pollution control equipment or fail to use it properly. We found that PCA places too little emphasis on continuing compliance, particularly in its air, water, and solid waste programs. PCA does too few inspections, gives too little scrutiny to company self-reports, and collects minimal information on actual pollution levels.

2. The Legislature should strengthen PCA's enforcement capabilities by granting the PCA commissioner administrative penalty authority for air, water, and solid waste violations.

The commissioner should have broader authority to issue administrative penalties.

With the exception of the Hazardous Waste Division, PCA lacks the enforcement tools necessary to encourage prompt compliance. Notices of violation tell violators what they have done wrong, but impose no penalties for the violations nor incentives for rapid actions. For companies that fail to respond to notices of violation, PCA may seek stipulation agreements or litigation. But these enforcement tools tend to be expensive and time-consuming, so it is sometimes difficult for PCA to justify their use.

To help enforcement staff focus more of their efforts on the largest violations, we think PCA should have a stronger enforcement tool for smaller and repeat violations. In general, administrative penalties have proven to be an effective tool in PCA's Hazardous Waste Division. Because most of the division's penalties have been "forgivable" if violators respond promptly, relatively few actual penalties have been levied and most violations have been corrected. We think other divisions should make use of administrative penalties, particularly forgivable ones.

The experience of the Hazardous Waste Division with administrative penalties also demonstrates some pitfalls that other divisions should avoid. The division takes too long to issue these penalties and needs a clearer policy on the types of enforcement actions that are appropriate for various types of violations. We think the Legislature should grant the commissioner authority to issue administrative penalties for air, water, and solid waste violations, but PCA should first identify circumstances in which penalties might be used.

3. PCA divisions should develop policies that more clearly define violations.

During our file reviews, we saw many technical violations of state or federal requirements that did not result in formal enforcement actions by PCA. For example, we saw many missed deadlines that did not result in notices of violation. Staff also told us that violations might not be issued for excessive pollution levels if the violations were unintentional or based on tests with wide margins of error. Technically, PCA could issue notices of violation in any of these circumstances, and some people argue that it should do so. However, because some PCA deadlines are arbitrary and some technical violations have little environmental consequence, we think it is reasonable for PCA to have some discretion about when to take formal enforcement actions. To ensure consistency among enforcement staff, it is equally reasonable to expect PCA to develop general policies on the violation thresholds that will trigger formal enforcement actions.

4. PCA should strengthen the capabilities of its regional offices.

There should be more enforcement staff outside the Twin Cities metropolitan area.

PCA has added some enforcement staff to regional offices in recent years, but more than 90 percent of its 700 staff work out of the agency's St. Paul offices. One division (Air Quality) has inspectors in only two of the five regions outside the Twin Cities area, and another division (Hazardous Waste) has no regional enforcement staff. At a minimum, this results in considerable travel time for staff who inspect facilities outside the Twin Cities metropolitan area. The travel distance may also result in fewer site visits altogether, as we found in those regions that do not have air quality inspection staff. To monitor ongoing compliance more closely, we think it makes sense to locate enforcement staff as close as possible to the regulated facilities.

Some PCA managers expressed concerns that greater reliance on the regions might result in inconsistent enforcement practices or less objective enforcement staff. These are legitimate concerns, but they can be addressed with effective supervision of regional staff. We think PCA should ensure appropriate supervision and then consider relocating some current enforcement staff or adding new staff to the regional offices.

5. PCA should help the Legislature target scarce environmental resources to those problems posing the greatest risks.

In 1987, the Environmental Protection Agency evaluated the relative risks of various types of pollution and environmental problems.[1] The study ranked the risks needing the most immediate attention given the regulatory programs already in place. Figure 6.1 shows environmental problems that EPA ranked high for cancer and non-cancer health risks.[2] For example, EPA's study indicates that criteria and toxic air pollutants pose relatively high risks, while ground water contamination (such as that caused by hazardous waste, landfills, and leaking storage tanks) usually pose less risk. The study noted that

1 U.S. Environmental Protection Agency, *Unfinished Business: A Comparative Assessment of Environmental Problems* (Washington, D.C., February 1987), Vol. I.

2 EPA also evaluated the broader effects of these problems on the environment and public welfare.

Figure 6.1: Highest Ranking Environmental Problems on the Basis of Cancer and Non-Cancer Health Risks

Highest Cancer Risks

Worker exposure to chemicals
Indoor radon
Pesticide residue on foods
Indoor air pollutants
Consumer exposure to chemicals in products
Toxic air pollutants

Highest Non-Cancer Risks

Criteria air pollutants
Toxic air pollutants
Indoor air pollutants other than radon
Drinking water contamination
Accidental releases of toxics
Pesticide residue on foods
Consumer exposure to chemicals in products
Worker exposure to chemicals

Source: U.S. Environmental Protection Agency, *Unfinished Business: A Comparative Assessment of Environmental Problems* (Washington, D.C., February 1987), 28-29, 42.

PCA priorities should reflect health and environmental risks.

the risk-based rankings did not correspond closely with EPA's existing program priorities.

We think it is important for PCA to periodically review its own priorities. Since 1986, PCA's funding sources have grown more diverse and the agency has relied increasingly on special revenues, rather than the state general fund. The availability of these funding sources has helped shape PCA priorities, as have public perceptions of environmental risks. The Legislature has approved new staff and funding for previously unregulated areas, such as superfund and underground tank cleanups. However, based on EPA's 1987 risk rankings, we concluded that many of PCA's recent staff additions have not targeted problems with the highest health and environmental risks. For example, staffing for enforcement of PCA's "old" programs has not grown significantly. The Air Quality Division regulates some of Minnesota's most serious health and environmental risks, but has lacked sufficient staff to rewrite outdated rules and properly oversee stationary pollution sources. PCA should help the Legislature ensure that agency priorities are not driven by its funding sources.

6. PCA should strive to have up-to-date rules and permit conditions that reflect these rules.

State law grants PCA broad authority to issue permits. For example, PCA may issue permits "under such conditions as it may prescribe" to prevent or regulate pollution.[3] Many permittees have been frustrated by PCA's negotia-

3 *Minn. Stat.* §116.07, Subd. 4a.

tion of permit conditions that are more restrictive than state rules. Permittees told us that PCA is in a position to "hold permits hostage" unless the permit applicant agrees to the supplemental restrictions. Some of the complaints we heard reflected problems that have largely been addressed by recent rules, such as those developed for solid waste and water quality. However, PCA still negotiates many air quality permit conditions case by case. PCA managers told us that it is their goal to develop more inclusive rules, thus reducing the need for negotiation. We think PCA should strive to upgrade all of its basic permitting rules within the next two to three years and should reallocate staff to achieve this, if necessary. After this time, staff should provide the PCA Board with summary reports of all cases in which permit conditions exceed the requirements of state rules.

7. PCA should develop a comprehensive strategy to address staff turnover.

Staff turnover has been a problem in all of PCA's divisions. Turnover delays PCA actions, confuses the regulated community, and increases the workloads of PCA staff. We found that about one-fourth of PCA staff left their positions in a recent 12-month period. Typically, staff leave to take different positions within PCA or other state agencies. Recent expansions of environmental programs within state government have created new opportunities for staff advancement or transfer.

We did not survey employees to find out the reasons they left positions. Perhaps PCA could do more to control the *amount* of turnover, for example, through job enrichment or by creating better work environments. At a minimum, however, we think the agency should develop a comprehensive strategy to mitigate the *effects* of turnover. For example, PCA could require staff moving elsewhere in the agency to split time between their new and old positions until replacements can assume full responsibility. PCA's divisions should each have policy and procedure manuals that help new staff understand their jobs as quickly as possible. Management information systems should be designed to produce complete histories of cleanup sites or enforcement actions so that new staff can quickly assess needed actions.

8. The Legislature should resolve the apparent contradiction between general laws pertaining to fees and PCA's fee laws, and it should consider authorizing the use of fees to pay for enforcement costs.

There are several state laws governing PCA fees. According to general state law, fees should be charged only for services that directly benefit the fee payer, and state general funds should pay for services that provide benefits to the general community.[4] Seemingly, this would rule out the use of fees for activities such as enforcement of pollution regulation or identification of unregulated polluters, which primarily benefit the general public rather than individual polluters. However, state law also specifically authorizes PCA to

4 *Minn. Stat.* §16A.128.

use permit fees to pay for "the reasonable costs of... implementing and enforcing the conditions of the permits...."[5] The fee laws in PCA statutes are based on the notion that polluters should pay for services made necessary by their pollution, and that fee payers benefit from uniform enforcement of regulations. PCA currently uses its statewide hazardous waste generator fee to pay for a wide variety of regulatory costs, while other divisions use permit fees primarily to pay for the costs of issuing permits.

The 1989 Legislature required all new fees and fee increases adopted by PCA to be subject to legislative approval in the subsequent biennial budget session. The Legislature also required PCA to set fees at levels that allow the state to recover appropriations made from the "special revenue fund."[6] Thus, the overriding basis for PCA fees is recovery of legislative appropriations.

The Legislature should clarify the purposes of PCA fees.

The Legislature should clarify the purposes of PCA fees. Specifically, it should address whether polluters should pay for all PCA regulatory costs or just some of them. If the Legislature decides that fee revenues should only pay for services that primarily benefit fee payers, it should consider increasing general fund support to the Hazardous Waste Division to replace certain revenues now derived from hazardous waste generator fees.

We think that the Legislature should allow PCA to collect some fees for routine inspection, compliance monitoring, and enforcement purposes. Although the general public benefits from these activities, the costs should probably be borne by the polluters that made the regulation necessary in the first place. In addition, the Legislature should consider allowing PCA to assess a fee surcharge against companies with histories of violations or enforcement actions. These companies consume a disproportionate share of PCA's enforcement resources, and the burden for these expenses should not be borne solely by the general public.

In addition, PCA and the Legislature should review the air and water permit fee structures. Because permits convey specific benefits to facilities, we think it is appropriate for fees to cover the full cost of issuing permits. Presently, this is not the case. In order to set fees that reflect the approximate costs of issuing permits to various types of facilities, PCA should develop better means of tracking the costs of issuing individual permits. Also, it is worth noting that the Ground Water and Solid Waste Division is the only PCA division that does not charge permit fees. We recommend that the Legislature authorize fees for open solid waste management facilities.

5 *Minn. Stat.* §116.07, Subd. 4d. Also see *Minn. Stat.* §116.12, Subd. 1. According to Minnesota law, specific provisions of law shall prevail when there are irreconcilable differences between specific and general laws, unless the general law was enacted after the specific law. In the latter case, which applies to the PCA fees, the general law prevails if it is "the manifest intention of the Legislature that such general provision shall prevail" (*Minn. Stat.* §645.26, Subd. 1).

6 *Minn. Laws* (1989), Ch. 335, Art. 1, Sect. 23.

9. PCA should improve its communication with facilities and governmental units that are subject to pollution regulation.

Many permittees and counties expressed concern to us about PCA practices, especially related to air and solid waste permits. PCA has not adequately publicized requirements for air quality permits, and some of its permit application forms are unclear. Applicants for air and solid waste permits have been frustrated by the time required for final PCA action. During 1990, the PCA Board had staff draft a booklet for all potential permittees explaining the permit process. Divisions may wish to supplement this general information with more detailed "fact sheets" or compliance manuals, such as those developed for solid and hazardous waste programs. In general, PCA should make greater efforts to hear the concerns of regulated facilities and local governments, and to keep them informed about changes in policy or procedures.[7]

10. PCA management should ensure that divisions assess penalties in a consistent manner.

Penalties should be assessed and negotiated consistently.

The total amount of penalties assessed for violations differs considerably among the PCA divisions. For example, the Water Quality Division collected about $700,000 in penalties in a recent 12-month period, and the Air Quality Division collected more than $1.1 million. In contrast, the Ground Water and Solid Waste Division collected total penalties of only about $10,000 during a recent 12-month period, although our review of files in this division indicated significant compliance problems. PCA staff noted that there are fewer facilities with solid waste permits than air and water permits, and penalty amounts have been lower partly because landfills tend to be less able to pay large penalties.[8]

In 1990, the PCA Board adopted a policy outlining the factors that staff should consider when setting civil penalties. The policy states that penalties should be (1) based on the gravity of the violations, (2) large enough to deter noncompliance, (3) larger than the economic benefit of noncompliance, and (4) consistent. We think the board's policy was a useful step toward more consistent penalties. However, during our discussions with staff we also learned that adjustments from original penalty proposals are not always negotiated consistently among divisions. For example, some staff require the violator to produce clear evidence of the need for an adjustment before changing an original penalty proposal, while other staff use the original proposal more as a bargaining position that can be routinely negotiated downward to a targeted settlement level.

---

7 PCA recognizes that it has had problems with external relations. The agency has made some efforts to improve communication by meeting with interested parties on feedlot and solid waste issues, for example.

8 There are about 370 open and closed solid waste management facilities with permits, compared to 1,100 facilities with water quality permits, and 800 with air quality permits.

11. PCA should improve its management information systems, and the PCA Board and commissioner should periodically receive summary information from these systems.

We found particular weaknesses in the management information systems of the Ground Water and Solid Waste, Air Quality, and Water Quality Divisions. For example, the Air Quality Division lacks a computerized permit tracking system, and the Ground Water and Solid Waste Division does not have a system that indicates which reports are overdue. Also, PCA's divisions do not have adequate systems for tracking the staff time spent on particular projects, which inhibits their ability to set appropriate permit fees.

The PCA Board has a heavy agenda of policy issues and should not be inundated with management information. But if the board is to effectively oversee the agency, it should be made aware of general trends in permit backlogs, the time required to issue permits, enforcement actions, the number of overdue reports, and the time required to return companies to compliance. Such information should be provided to the board annually.

In the past, the PCA Board and commissioner have left most management responsibilities to the PCA divisions. We think that some of the problems cited in this report, including the weak management information systems, merit closer attention from top PCA management. The board and commissioner should provide direction to divisions and monitor progress in making changes.

SCOPE OF THE PCA BOARD'S PERMIT REVIEW

Traditionally, PCA has issued permits to applicants that could demonstrate their ability to meet state and federal pollution regulations. PCA has usually not questioned the methods or materials used in production processes, nor has it questioned the need for facility construction. In other words, PCA's role has usually been limited to facility regulation rather than facility planning.

However, the PCA Board has been reconsidering its role in permitting as a result of a recent legal opinion from the Minnesota Attorney General's Office.[9] According to the opinion, the 1973 Minnesota Policy and Environmental Rights Act requires PCA to make two inquiries before issuing a permit.[10] First, PCA must determine that the proposed facility will meet environmental standards and regulations. Second, PCA must determine whether the facility will "materially adversely affect" the environment. If PCA determines that a facility will pollute, impair, or destroy natural resources, and if it finds that there is a "feasible and prudent alternative," it must deny the permit application. Prior to receiving the opinion from the Attorney General's Office, PCA

9 Memo from Ann M. Seha, Special Assistant Attorney General, to MPCA Board Members, "Dakota County Incinerator Permit Application," September 24, 1990.

10 *Minn. Stat.* Ch. 116D.

focused its review on whether the proposed facility met current environmental standards, and rarely conducted the second step.

The effect of this opinion is that PCA will now conduct more extensive reviews of permit applications. In the case of Dakota County's proposed incinerator, the PCA Board has considered not only the incinerator's compliance with air and solid waste rules, but also whether there is a need in the Twin Cities area for an incinerator of the proposed size. PCA staff told us that the Attorney General's opinion will likely affect permits besides those for solid waste incinerators. For example, the opinion might require PCA permit staff to consider whether companies emitting harmful air pollutants should alter their production processes to eliminate these emissions.

We have no basis for questioning the interpretation of statutes provided by the Attorney General's Office. However, we think the Legislature should consider the practical implications of this opinion and determine whether to make any changes in state law. For instance, the opinion will probably prolong PCA's already lengthy permit review process. PCA staff workloads and permit backlogs will probably increase if analyses of "feasible and prudent alternatives" become common.

The Legislature should consider the practical effects of a recent legal opinion.

Also, a requirement that PCA review the need for solid waste facilities appears to duplicate the planning responsibilities of counties, the Metropolitan Council, and the Office of Waste Management. State law requires all counties to develop solid waste management plans. The Metropolitan Council approves the plans of counties in the Twin Cities metropolitan area, and the Office of Waste Management approves other plans.[11] State law also authorizes the Metropolitan Council to determine whether proposed solid waste permits are consistent with county plans.[12]

In addition, state laws and rules do not define "materially adverse effects" or "feasible and prudent alternatives." Thus, it is unclear what standards PCA will use to make judgments on permit applications. Requiring PCA staff and board members to conduct environmental planning and analysis of alternatives will require different skills, perspectives, and standards than those presently used in the permitting process.

Finally, it is worth asking whether the analysis of "feasible and prudent alternatives" required by law will result in too much focus on means of pollution control, rather than ends. In general, we think PCA should focus on setting and enforcing effective pollution standards, rather than investigating alternative ways facilities or counties might meet the standards.[13] However, PCA

11 *Minn. Stat.* §115A.46.

12 *Minn. Stat.* §116.07, Subd. 4j (a).

13 PCA already does some reviews of alternative means of achieving standards under its water quality construction grant program.

staff believe there are circumstances in which reviews of alternatives are necessary to achieve the goal of pollution prevention.[14]

In light of the recent opinion from the Attorney General's Office, we think the Legislature should reconsider the requirements of the 1973 Minnesota Environmental Policy and Rights Act. There may be cases in which it is appropriate for PCA divisions to analyze "feasible and prudent alternatives." But given the roles of local and regional agencies in solid waste planning, we recommend that:

- **The Legislature should amend the 1973 Minnesota Environmental Policy and Rights Act (*Minn. Stat.* 116D.04, Subd. 6) by making the law inapplicable to solid waste permits.**

We also think the Legislature should review the intent of the act and consider its implications for other types of permits. The Legislature should consider whether state and local agencies issuing permits should merely ensure compliance with environmental regulations, or should also review "feasible and prudent alternatives." If the Legislature decides that reviews of alternatives are appropriate, we recommend that:

- **The Legislature should require the Environmental Quality Board to adopt rules for reviews of "feasible and prudent alternatives."**

ALTERNATIVE APPROACHES TO POLLUTION CONTROL

Pollution occurs because polluters do not bear the full costs of their actions.

Pollution occurs largely because polluters do not bear the full costs of their actions. Historically, polluters have not paid for their use of the environment, nor have they compensated society for the health and ecological problems they have caused. In short, the environment is overused and misused because it is inexpensive for companies and individuals to do so.

There are two general ways to address environmental misuse. Societies can either regulate pollution or establish economic incentives to discourage it. The regulatory, or "command and control," approach is the predominant approach of U.S. environmental regulation. It consists of setting pollution standards, issuing permits, monitoring pollution levels, and enforcing permits. At the outset of our study, some legislators asked us to consider whether Minnesota should develop other approaches to pollution control, such as market incentives. We reviewed research literature to evaluate concerns with traditional approaches and the feasibility of alternatives. Our review focused on stationary sources of water and air pollution.

---

14 State rules require environmental impact statements or environmental assessment worksheets for some projects, and the PCA Board can also decide whether to require environmental reviews for projects. These reviews provide information on project impacts and alternatives, but it is only through the subsequent permitting process that projects are approved or disapproved.

"Command and Control" Approaches to Pollution Control

In theory, the primary advantage of command and control regulation is its predictability. Through the process of setting standards and issuing permits, regulators can directly control the total amount of pollutants discharged. If there are significant risks or costs associated with certain types of pollution, regulators can set thresholds that limit discharges.

But effective command and control regulation requires clear standards, adequate enforcement staffing and authority, and an effective enforcement strategy. As indicated elsewhere in this report, PCA's enforcement presence has not been strong enough to ensure ongoing compliance with existing regulations. Also, because enforcement is expensive and time-consuming for regulators, polluters sometimes find that they can avoid penalties or negotiate smaller ones by delaying the regulatory process.

We found an emerging consensus in the research literature that there are other weaknesses of the command and control approach to pollution control. Specifically,

- **The most fundamental problems with command and control regulation are that it results in excessive costs to regulated facilities and provides few incentives for pollution reduction.**

Traditional pollution regulation does not result in "least cost" pollution control.

Under command and control regulation, pollution standards tend to be uniform—that is, the standards do not vary with the abatement costs of various industries.[15] But firms have widely varying "marginal" costs of meeting pollution standards.[16] Polluters with relatively low abatement costs may be capable of reducing pollution below government standards but have no financial incentive to do so. Polluters with high abatement costs can reduce pollution to meet these same standards, but at significantly greater expense than other companies. Because of this, it would be possible to achieve a given level of pollution control at costs significantly less than those required by uniform pollution standards. Or, put another way, uniform standards do not result in "least cost" pollution control. In fact, most studies have concluded that traditional regulatory approaches result in costs substantially higher than alternative regulatory approaches.[17] This causes a diversion of resources from other activities into pollution control, perhaps adversely affecting industrial productivity.

---

15 For example, federal regulations often require companies to install the "best available" pollution control technology. The appeal of uniform technology standards is that they eliminate the need for extensive analysis of the costs and benefits of pollution controls.

16 Marginal costs are the costs of purchasing an additional unit of benefits, in this case pollution reduction.

17 The most comprehensive research summary is found in T.H. Tietenberg, *Emissions Trading: An Exercise in Reforming Pollution Policy* (Washington, D.C., 1985), 38-59. Tietenberg reviews studies comparing the costs of command and control regulation with (1) simulations of "least cost" pollution controls, and (2) actual programs based on market incentives. For example, 7 of the 10 studies of air pollution control showed command and control strategies to be at least four times more expensive than alternative approaches.

Pollution Charges

To address the problems of command and control regulation, some people advocate putting prices on pollution. The most common suggestion is a system of fees based on the amount of pollutants emitted or discharged. Companies would pay for any pollution they generate, creating incentives for pollution reduction. Companies with relatively low marginal abatement costs would probably invest more heavily in pollution control than companies with high abatement costs. Firms would have an incentive to evaluate various abatement methods, not just the methods specified by regulators. For example, rather than installing equipment to control toxic stack emissions, companies might decide to reduce their use of toxic materials altogether. In sum, such pollution charges could result in lower cost pollution control without sacrificing environmental quality.

One way to discourage pollution is to put a price on it.

Perhaps the most widely used form of pollution charges has been tipping fees at landfills.[18] The rapid increase in these fees during the past decade helped strengthen the market for alternative solid waste disposal methods, such as incineration and recycling. Minnesota also has volume-based fees for hazardous wastes and toxic pollutants. However, our literature review showed that pollution fees have been used primarily as a revenue source, not for the purpose of reducing air and water pollution. Several European countries use relatively small effluent fees in combination with traditional permit systems. Most of these fees have been intended to raise revenues for environmental activities, not to change the behavior of the polluting firms.[19] PCA staff told us that the volume-based fees paid by Minnesota's hazardous waste generators are probably too low to affect company behavior. PCA's Water Quality Division charges annual fees to facilities based on the quantities of water discharged, not based on the amounts or toxicity of pollutants discharged.[20]

If the Legislature wanted to create pollution disincentives through air or water pollution fees, there would be some important practical problems. First, it would be difficult to set fees that would result in a predictable level of pollution. Setting fees would likely involve considerable trial and error because there is little information on the responsiveness of firms to pollution charges. Second, setting fees based on pollution levels requires an accurate pollution monitoring network. As discussed earlier in the report, PCA collects little information on actual air emissions, and most of the self-reported water discharge data is not independently verified. Third, the use of state pollution fees would not exempt Minnesota from federal command and control pollution requirements, which significantly influence pollution control costs.

---

18 Technically, tipping fees are charged for the use of scarce landfill space, and are not fees on pollution itself.

19 Robert W. Hahn, "Economic Prescriptions for Environmental Problems: How the Patient Followed the Doctor's Orders," *Journal of Economic Perspectives* (Spring 1989): 104-107.

20 PCA also levies fines against polluters, thus encouraging compliance with uniform standards. However, this form of economic incentive does not encourage firms to reduce pollution below standards, nor does it encourage "least cost" pollution control.

Marketable Permits

Pollution fees reduce overuse of the environment by forcing polluters to pay for their actions. In contrast, a system of marketable permits would establish property rights for environmental resources. The "right" to pollute would be granted (or auctioned) in permits containing pollution standards. Firms with pollution levels below these standards would be allowed to trade their unused pollution rights to other polluters.

One of the strengths of marketable permit systems is predictability. Regulators could directly control overall emission levels through permits, as they do in traditional command and control systems. But, unlike command and control regulation, marketable permits would encourage achievement of a given pollution standard at the lowest possible cost. Firms with low pollution abatement costs would have an incentive to reduce their pollution levels and sell their remaining pollution rights to firms with higher abatement costs. Thus, marketable permit systems would increase firms' flexibility and likely reduce the cost of meeting a given pollution standard.

EPA has experimented with marketable permits.

The largest experiment with this approach has been EPA's air quality emissions trading program.[21] EPA estimates that the program has saved $800 million in pollution abatement costs without sacrificing environmental quality. However, EPA has allowed only limited applications of emissions trading. For example, EPA's policies have generally encouraged trading among new rather than existing pollution sources. Also, emissions trading does not exempt companies from EPA's uniform technology-based standards that are a major factor in industrial pollution costs. Although there is little state-by-state information on the amount of emissions trading activity, Minnesota appears to have used the emissions trading program less than many, if not most, states.[22]

The federal emissions trading program has demonstrated some problems with this approach to pollution control. For example, high transaction costs have been a serious impediment to trades. Many companies have found that the lengthy process for getting trades approved by regulators and the difficulty of finding trading partners have not justified the effort. In addition, an effective emissions trading program requires a competitive trading market, and such a market has not developed. Companies have been unable to find trading partners (partly because of EPA trading restrictions), so most emissions trades have been within, rather than between, companies. It is also worth noting that emissions trading has highlighted the lack of adequate information on actual emissions.

---

21 This program establishes four different types of emissions trading--commonly called netting, offsets, bubbles, and banking. Companies can trade emission credits between their own emission sources, or with other companies. Nationally, there have probably been more than 10,000 emission trades. See Robert W. Hahn and Gordon L. Hester, "Where Did All the Markets Go? An Analysis of EPA's Emissions Trading Program," *Yale Journal on Regulation,* Winter 1989, 109-153.

22 Of the four types of emissions trading available, Minnesota only uses netting. Netting allows firms making source modifications to be classified as "minor" rather than "major" sources, thus subjecting them to less restrictive standards. Specifically, a plant with several emission sources can increase emissions at one source and reduce emissions at another so that the net increase does not equal the emissions of a "major" source. PCA staff estimated that they approved about six permits with netting in 1990.

Conclusions

Market incentives offer two potential advantages over traditional approaches to pollution control. First, they can encourage companies to seek ongoing pollution reductions, rather than merely meeting government standards. Second, they can encourage "least cost" pollution control by increasing company flexibility rather than dictating uniform standards.

Regarding the first advantage, we think market incentives such as volume-based fees can certainly create incentives for pollution reductions. However, there is virtually no information on the responsiveness of companies to particular fee levels. Thus, fees would have to be set based on trial and error, and would probably be used in conjunction with traditional pollution standards, at least initially. Most pollution fees introduced in this country and others have been intended primarily to raise revenues, not to change the behavior of polluters. Regarding the second advantage, state-developed market incentives would not result in "least cost" pollution control because these approaches would not replace federal standards. Companies would still be required to meet federal pollution standards, which are the primary determinants of pollution control costs.

These practical problems with market incentives should not preclude the use of fees for other purposes. For example, because the cost of issuing air and water permits is often related to facilities' amounts and types of pollutants, it makes sense for PCA to consider linking permit fees to facility emissions or discharges. However, pollution-based fees require reliable information on pollution emissions and discharges, and we question whether this is now available.

For the present time, we think PCA should focus on improving the quality of its command and control regulation. Specifically, PCA should collect more data on emissions and discharges, and inspect facilities more regularly. To create financial incentives for compliance, PCA should more aggressively seek penalties that recover the economic advantages that violators gain through noncompliance. At the same time, PCA should be sensitive to the inherent costs of uniform standards and should be flexible in its permit requirements, where appropriate and possible.

SURVEY OF COMPANIES WITH AIR QUALITY PERMITS

Appendix A

In September 1990, we sent this survey to 361 organizations. We drew a systematic random sample of organizations issued air quality permits in 1985 or later. We sent a followup letter to companies that did not respond to our first letter. Companies were asked to base their responses on their dealings with the Pollution Control Agency's Air Quality Division in the *past three years*.

1. Please rate the PCA's air quality permit staff on their:

Percentage of respondents:

	Poor	Fair	Good	Excel-lent	Don't Know/ No Response
a. Technical competence	4.6%	18.8%	49.8%	9.2%	17.6%
b. Ability to provide answers to your questions	8.4	23.0	43.3	12.3	13.0
c. Timeliness of action	20.3	28.7	30.7	6.1	14.2

Percentage of respondents:

	Strongly Disagree	Disagree	Agree	Strongly Agree	Don't Know/ No Response
2. PCA clearly specifies the information it needs from us to process our permit applications.	6.5%	23.8%	56.7%	4.6%	8.4%
3. Delays in getting air quality permits from PCA have caused our company financial hardship.	15.3	49.0	13.8	9.6	12.3
4. PCA is flexible when regulating the type of pollution control technology that our company is permitted to use.	7.3	16.1	46.4	1.5	28.7
5. When writing permits, PCA treats companies in our line of business consistently.	5.8	11.1	29.1	2.3	51.7
6. The state's air pollution rules and guidelines provide our company with a predictable basis for making pollution control investments.	10.7	27.6	38.3	1.9	21.5
7. Our company could reduce the costs of meeting its current pollution standards if given more choice about the pollution control equipment it can use.	1.5	29.1	28.0	8.4	33.0
8. PCA is consistent in its enforcement of air quality violations.	6.9	12.3	25.3	1.5	54.0
9. Staff turnover in PCA's Air Quality Division has caused problems for our company.	5.0	37.9	19.9	7.3	29.9

10. PCA air quality permit fees are (check one):

39.1%	a. Too high
56.3	b. Appropriate
0.3	c. Too low
4.2	d. Other/no response

11. During the past three years (check one):

12.3%	a. The Air Quality Division has become more responsive to the needs of permittees.
13.4	b. The Air Quality Division has become less responsive to the needs of permittees.
66.7	c. The Air Quality Division's responsiveness has not changed significantly.
7.7	d. Other/no response

12. If you could do one thing to improve the operations of PCA's Air Quality Division, which of the following would it be? (check one)

7.3%	a. Improve the technical competence of staff
6.1	b. Reduce the amount of PCA staff turnover
24.0	c. Reduce the time it takes to process permit applications
23.1	d. Increase the flexibility of pollution regulations
5.1	e. Increase the predictability and consistency of enforcement
23.6	f. Clarify PCA's expectations of permittees and companies seeking permits
10.8	g. Other/no response

Note: N = 261. Totals do not all add to 100 percent due to rounding. For question 12, we prorated the cases in which respondents provided more than one answer (for example, if the respondent gave two answers, each counted as half a response).

SURVEY OF COUNTY SOLID WASTE OFFICERS

Appendix B

INSTRUCTIONS: Please give your best answer to each of the following questions. Select only one answer for each question. Please base your responses on your county's dealings with the Pollution Control Agency's Ground Water and Solid Waste Division in the past three years. All answers will be considered confidential and will be reported by the Legislative Auditor's Office in summary form only.

1. How many permitted landfills are currently operating in your county?

		0	1	2 or More
a.	Sanitary landfills	32	40	5
b.	Industrial landfills	71	4	2
c.	Demolition landfills	33	36	8
d.	Composting facilities	60	12	5
e.	Other	66	9	2

2. How many of these facilities have sought or received new, renewed, or modified permits during the past three years? _____

0	1	2	3 or More
23	26	23	5

3. Are there any landfills or industrial sites in your county that are on the state superfund list?

☐ Yes	☐ No	☐ Don't know/no response
34	36	7

4. If yes, how many?_____

1	2 or More	No Response
23	10	1

5. Please rate the PCA's solid waste permit staff on their:

		Number of Respondents Who Said:				
		Poor	Fair	Good	Excel-lent	Don't Know/ No Response
a.	Technical competence	5	25	25	12	10
b.	Ability to provide answers to your questions	12	28	22	12	3
c.	Timeliness of action	42	19	13	1	2

		Number of Respondents Who Said:				
		Strongly Disagree	Disagree	Agree	Strongly Agree	Don't Know/ No Response
6.	PCA clearly specifies the information it needs from us to process our permit applications.	4	32	25	7	9
7	Delays in getting or modifying solid waste permits from PCA have caused our county financial hardship.	6	28	11	19	13
8.	I receive helpful advice from PCA's regional office on technical and procedural matters.	2	4	39	29	3
9.	PCA is flexible when regulating the type of pollution control technology that our county is permitted to use.	14	22	25	2	14
10.	The state's solid waste rules provide our county with a predictable basis for making pollution control investments.	20	31	19	1	6
11.	Our county could reduce the costs of meeting its current pollution standards if given more choice about the pollution control equipment it can use.	1	11	35	5	25
12.	PCA is consistent in its enforcement of landfill and other solid waste management violations.	17	24	26	—	10
13.	PCA regularly inspects facilities and takes steps to correct conditions that might pollute the environment.	5	24	41	—	7
14.	PCA has effectively and efficiently managed cleanups of landfills and industrial sites where pollution has occurred.	5	25	11	3	33
15.	[*NON-METRO COUNTIES ONLY*] PCA has provided useful and timely reviews of county solid waste plans.	18	20	18	4	17

16. During the past three years (check one):

16 ☐ a. PCA's Ground Water and Solid Waste Division has become more responsive to the needs of counties.

26 ☐ b. PCA's Ground Water and Solid Waste Division has become less responsive to the needs of counties.

30 ☐ c. PCA's Ground Water and Solid Waste Division's responsiveness has not changed significantly.

5 No Response

17. If you could do one thing to improve the operations of PCA's Ground Water and Solid Waste Division, which of the following would it be? (check one)

2 ☐ a. Improve the technical competence of staff

21 ☐ b. Reduce the amount of staff turnover

11 ☐ c. Reduce the time it takes to process permit applications

9 ☐ d. Increase the flexibility of pollution regulations

4 ☐ e. Increase the predictibility and consistency of enforcement

10 ☐ f. Clarify PCA's expectations of permitees and county's seeking permits

12 ☐ g. Other(specify): _____

8 More than one response

SELECTED PROGRAM EVALUATIONS

Insurance Regulation, January 1986	86-01
Tax Increment Financing, January 1986	86-02
Fish Management, February 1986	86-03
Deinstitutionalization of Mentally Ill People, February 1986	86-04
Deinstitutionalization of Mentally Retarded People, February 1986	86-05
Management of Public Employee Pension Funds, May 1986	86-06
Aid to Families with Dependent Children, January 1987	87-01
Water Quality Monitoring, February 1987	87-02
Financing County Human Services, February 1987	87-03
Employment and Training Programs, March 1987	87-04
County State Aid Highway System: Follow-Up, July 1987	87-05
Minnesota State High School League, December 1987	87-06
Metropolitan Transit Planning, January 1988	88-01
Farm Interest Buydown Program, January 1988	88-02
Workers' Compensation, February 1988	88-03
Health Plan Regulation, February 1988	88-04
Trends in Education Expenditures, March 1988	88-05
Remodeling of University of Minnesota President's House and Office, March 1988	88-06
University of Minnesota Physical Plant, August 1988	88-07
Medicaid: Prepayment and Postpayment Review - Follow-Up, August 1988	88-08
High School Education, December 1988	88-09
High School Education: Report Summary, December 1988	88-10
Statewide Cost of Living Differences, January 1989	89-01
Access to Medicaid Services, February 1989	89-02
Use of Public Assistance Programs by AFDC Recipients, February 1989	89-03
Minnesota Housing Finance Agency, March 1989	89-04
Community Residences for Adults with Mental Illness, December 1989	89-05
Lawful Gambling, January 1990	90-01
Local Government Lobbying, February 1990	90-02
School District Spending, February 1990	90-03
Local Government Spending, March 1990	90-04
Administration of Reimbursement to Community Facilities for the Mentally Retarded, December 1990	90-05
Pollution Control Agency, January 1991	91-01
Teacher Compensation, forthcoming	
Nursing Homes: A Financial Review, forthcoming	
State Investment Performance, forthcoming	
Corrections Policy, forthcoming	
Game and Fish Fund, forthcoming	
Greater Minnesota Corporation: Organizational Structure and Accountability, forthcoming	
State Contracting, forthcoming	

Evaluation reports can be obtained free of charge from the Program Evaluation Division, 122 Veterans Service Building, Saint Paul, Minnesota 55155, 612/296-4708.