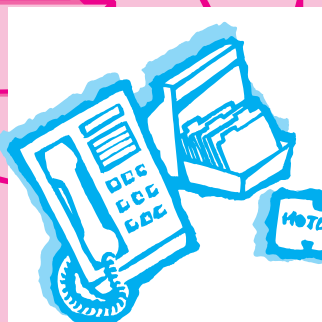


US EPA ARCHIVE DOCUMENT



Pollution Prevention Incentives for States (PPIS) Grant Program Assessment Study



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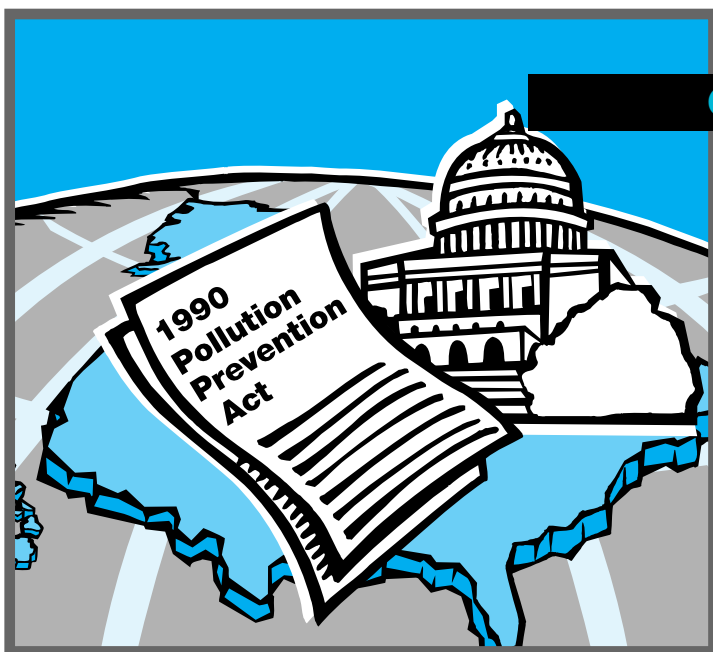
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Chapter I

Introduction

As an initial step in EPA's long-term strategy to evaluate the Pollution Prevention Incentives for States (PPIS)¹ grant program, this report documents the full range of activities funded by the PPIS grant program during the first five years. All of the information presented in this report is based solely on interviews or materials prepared by the grantees themselves. This report does not attempt to compare or rate state programs, nor is the study designed to evaluate the effectiveness of specific activities funded by the grant. This report represents an accounting of how grantees used EPA funds to stimulate and enhance pollution prevention awareness and initiatives throughout the country.

In 1994, the General Accounting Office (GAO) studied 107 state programs that were funded, in part, by PPIS funds to assess how well these programs are implementing the federal pollution prevention strategy.² While it is not EPA's formal response to the GAO study, this report does attempt to answer similar questions to those raised by GAO, such as:

- Are states using PPIS funding to support activities that promote pollution prevention?
- How are states combining regulatory and voluntary approaches towards pollution prevention?
- Do PPIS grants support the establishment of sustainable pollution prevention programs at the state level?

The conclusions from this report and GAO's report may differ given the different people interviewed. While the GAO report surveyed contacts from state programs from a list provided by the National Pollution Prevention Roundtable, this study draws on material obtained from the grant recipients themselves. Furthermore, the GAO report failed to link the different activities at the pollution prevention programs to specific funding sources. For example, states may provide recycling assistance, but

this activity is not necessarily funded with PPIS funds. This report only looks at the PPIS-funded portion of state programs to answer the above-mentioned questions.

The remainder of this chapter presents background information on the PPIS grant program, describes the purpose and scope of the study, recounts the methodology and data sources used, identifies study limitations, and overviews the contents of the remainder of the report.



A. Background on PPIS Grant Program

EPA established the PPIS grant program with the philosophy that states should play a primary role in encouraging industry, small and medium-sized businesses, local governments, and the public to shift priorities from pollution control to pollution prevention. Because states have more direct contact with generators and hence are more aware of their needs and problems, EPA believes that state-based environmental programs can make a unique contribution to the national effort to promote source reduction.

At the outset of the program in 1989, EPA established several goals, including:

- Empowering states to build a pollution prevention infrastructure;
- Learning from and building upon innovative means of implementing pollution prevention at both state and facility levels;

- Providing resources for pollution prevention technical assistance and training;
- Supporting states in establishing and expanding pollution prevention programs; and
- Fostering federal and state information-sharing and communication.

From these broad goals, EPA developed specific criteria to evaluate grant proposals received from states. According to these criteria, state grant proposals should:

- Target areas for risk reduction and integrate these areas in the state's overall pollution prevention goals and strategies;
- Identify multimedia opportunities;
- Leverage pollution prevention activities of other pollution prevention programs or organizations in the state;
- Identify measures of success;
- Identify a plan for dissemination of results; and
- Identify plans for funding the pollution prevention program over time.

The PPIS grant program has evolved to meet changing needs and priorities. The initial grants awarded in 1989 funded state programs to implement source reduction and recycling programs. After the passage of the 1990 Pollution Prevention Act, EPA changed the name of the program from the Source Reduction and Recycling Technical Assistance (SRRTA) program to the Pollution Prevention Incentives for States (PPIS) program. The new name reflects EPA's increased emphasis on pollution prevention.

In 1992, EPA began encouraging states to build upon and

expand their existing pollution prevention programs. To receive additional funds under PPIS, states would need to show EPA that they were either:

- Integrating pollution prevention into state regulatory programs; or
- Establishing a statewide pollution prevention infrastructure involving all levels of state government, including promoting interagency pollution prevention initiatives with state departments of agriculture, transportation, energy, commerce, and development, and defining the roles of county and municipal governments.

As most states have now developed basic pollution prevention programs, EPA has shifted responsibility for implementing the grant program from EPA Headquarters to the EPA Regions. This shift gives Regions flexibility to focus resources on local priorities. Some regional priorities include:

- **Nonindustrial sectors.** To build a strong pollution prevention infrastructure, some Regions encourage applicants to establish partnerships with state agencies in nonindustrial sectors such as agriculture, energy, health, and transportation.
- **Indoor air quality.** Because people spend as much as 90 percent of their time indoors, some Regions encourage states to demonstrate solutions to indoor air quality problems in both industrial and nonindustrial settings.
- **Environmental justice.** Preventing pollution in low-income and minority neighborhoods is a priority for several EPA Regions. These Regions

give extra weight to grant proposals that plan to integrate pollution prevention and environmental justice.

As the PPIS grant program matures, EPA will place increasing emphasis on evaluation—determining which program components might be most effective in achieving pollution prevention, and establishing measures of program effectiveness. This report represents a first step in measuring pollution prevention progress by documenting grant-funded pollution prevention activities underway in the states. Over the next few years, EPA will continue to measure and evaluate program effectiveness. Specifically, EPA plans to offer technical assistance to the states in pollution prevention measurement and narrow PPIS award criteria to fund the development of measurement methodologies in fis-

cal year (FY) 1996. As EPA awards these grants, the Agency will develop criteria to assess the success of different measurement methodologies. EPA will then use these criteria to evaluate the impact of the PPIS grant program in preventing pollution nationwide.

Measuring program effectiveness and pollution prevention progress has been a persistent problem for state pollution prevention programs. Finite resources, the inherent difficulty in developing measurement methodologies, and limited data have constrained the ability of the states to measure progress. For a more in-depth look at the ways EPA traditionally evaluates program effectiveness and the difficulties in measuring pollution prevention, please see Chapter IV on Measurement.



B. Purpose and Scope of Report

This report marks the first time that EPA has taken a comprehensive look at state pollution prevention activities funded by the PPIS grant program. Given that the states themselves have only just begun to measure their progress, the purpose of this report is to identify what is happening in the states right now. The next three chapters of this report seek to answer the following questions:

- How much money has EPA invested in state pollution prevention programs and how has this funding changed over time?
- What types of organizations have received funding and where are they located?
- Are the funded programs regulatory or voluntary in nature?

Redefining the State/EPA Grant Relationship

As part of the Agency's commitment to continually improving government, EPA has established the Performance Partnership Grant (PPG) program. This program will enable states and tribes to combine funds from two or more categorical grants (including PPIS) into a multi-program grant or PPG. Benefits of PPGs include:

- **Increased flexibility.** States and tribes will have the flexibility to address their highest environmental priorities across all media and to establish resource allocations based on those priorities, while continuing to address core program commitments.
- **Improved environmental performance.** States and tribes can more effectively link program activities with environmental goals

and program outcomes as well as develop innovative pollution prevention, ecosystem, and community-based strategies.

- **Administrative savings.** Recipients and EPA can reduce administrative burdens and costs by greatly reducing the numbers of grant applications, budgets, workplans, and reports.
- **Strengthened partnerships.** EPA will develop partnerships with states and tribes where both parties have the same environmental and program goals and deploy their unique resources and abilities to accomplish these goals.

EPA will begin piloting the PPG program in FY96.

- What return did EPA receive on its investment (measured by what activities the grantees implemented)?
- How many people were the grantees able to reach?
- How are grantees currently evaluating their programs?
- Are any grantees measuring actual reductions in pollution?

The final chapter—case studies of five state pollution prevention programs—examines the role of PPIS funding in each of these states and places PPIS funding in the greater context of state pollution prevention activities. The chapter also evaluates whether or not EPA achieved, in each of these states, the objectives established at the outset of the grant program.

This study does not attempt to compare state programs or rank states in any manner. Descriptions of different programs are provided to illustrate alternative models of implementing pollution prevention programs. This report is not intended to rate state programs, neither does it evaluate the effectiveness of specific activities (such as a newsletter, manual, or training session) conducted under the grant. Rather, EPA seeks to narrate grant activities as reported by the grantees.

The report covers SRRTA and PPIS grants awarded from 1989 through 1993. Other EPA pollution prevention sector grants were excluded, such as the National Industrial Competitiveness through Efficiency: Energy, Environment, and Economics (NICE3); Agriculture in Concert with the Environment (ACE); Risk

Reduction through Pollution Prevention (R2P2); Municipal Water Pollution Prevention (MWPP); and grants awarded through EPA's media programs. In addition, because grants awarded in FY94 were in the early stages of implementation during the data-collection phase of this study, they were not included.



C. Methodology and Data Sources

EPA employed the following methodology to collect information on PPIS-supported activities. For Chapters II through IV, which examine PPIS-funded activities nationwide, EPA conducted comprehensive interviews with each grant recipient. These interviews enabled EPA to catalogue the activities supported by the grant, accomplishments, and barriers to implementation. Where possible, EPA collected quantitative measures of activity level for each area of funding. For example, EPA collected data on the number of audits conducted, case studies developed, training sessions held, and other parameters. EPA also asked questions designed to elicit information on the impact of these activities. For example, if states conduct waste audits for industrial facilities, EPA asked if they track whether or not the facilities actually implement state-recommended pollution prevention measures. Furthermore, for those states that do track whether or not the facilities implement recommendations, EPA also asked the states to describe the

fiscal and environmental impact of implementing the recommendations, as reported by the facilities. To determine why states might not conduct such follow-through activities, EPA asked states to describe the barriers to facility followup. In addition to the quantitative measures described above, EPA asked grant recipients to describe examples of successes they had in implementing their grants. The interviews also tracked the industries or sectors (e.g., electroplating, agriculture, small businesses) that different grant activities targeted.

Before conducting the interviews, EPA reviewed all available in-house information contained in EPA's Pollution Prevention Information Tracking System (PPITS). This system contains data from the grant application and semiannual progress reports, including award amount, activities funded, and accomplishments. EPA also reviewed, where available, final reports and other documentation that grant recipients supplied.

Five Regions participated in the development of the case studies. The pollution prevention coordinator from each of these Regions selected a representative state from their region. For each case-study state, EPA reviewed in-house information and conducted comprehensive interviews to assess the impact of PPIS grant funding. In these interviews, EPA used a standard list of questions to assess:

- The organizational structure of each program;
- The current budget and sources of funding;
- Pollution prevention legislation and strategies in place;

- The activities accomplished with PPIS funding;
- The impact of PPIS funding on developing a self-sustaining program, integrating pollution prevention into the regulatory program, and evaluating success; and
- The future direction of the program.



C.1 Limitations

The reader should keep in mind some limitations when considering the findings presented in this report. One limitation relates to the type of data that EPA collected. Not all states track the same information. Some states have much more detailed information, on both the number of activities supported and the impacts of these activities on preventing pollution. For example, one state might collect detailed data on the number of workshops sponsored, record the exact number of attendees, and follow-through to determine whether or not the attendees actually implemented any pollution prevention actions as a result of the workshop. Other grant recipients, however, may track only the number of workshops and a range of attendees. Implications of this situation

are twofold. First, the report might underestimate the number of activities supported by PPIS funds. Second, the report presents a quantitative measure as a range of activity because EPA does not have exact numbers. Additional data limitations include the following:

- Four states representing six grants could not be interviewed for the study due to scheduling difficulties;
- Some progress reports and final reports could not be obtained; and
- Some of the grants were still in progress at the time the study was concluded, and thus all tasks were not completed.



D. Outline of Report

The remainder of this report presents EPA's assessment of the PPIS grant program, and it is organized as follows:

- **Chapter II** provides an overview of the distribution of PPIS funds from 1989 to 1993. To frame the context of PPIS funding, the chapter also briefly examines other state pollution prevention funding sources, such as state general funds and hazardous

waste fees. The distribution of grant funding across EPA Regions, states, and organization type is also described.

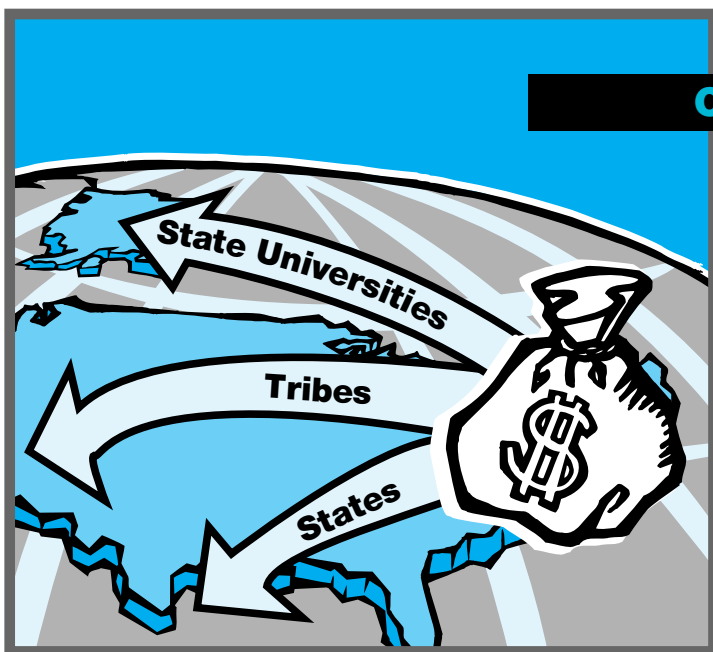
- **Chapter III** identifies the types of businesses and industry sectors that the state programs target, and summarizes the activities that the PPIS program supports (e.g., workshops, demonstration projects, clearinghouses) and the types of programs supported (e.g., voluntary, regulatory).
- **Chapter IV** examines how grantees measure the effectiveness of their programs, including the actions they take to follow up on their program activities (e.g., audits, training) to see if facilities actually implement pollution prevention measures. The chapter also describes the barriers and problems that grant recipients face in conducting followup activities.
- **Chapter V** illustrates how the PPIS grants supported pollution prevention activities in five states. These in-depth case studies examine how the PPIS grants were integrated into the states' pollution prevention programs and highlight the effectiveness of the grants in building infrastructure and self-sustaining programs.

¹ EPA initially called the grant program the Source Reduction and Recycling Technical Assistance (SRRTA) program. Throughout this report, PPIS refers to both PPIS and SRRTA grants.

² General Accounting Office. 1994. Pollution prevention: EPA should reexamine the objectives and sustainability of state programs. GAO/PEMD-94-8. January.

Chapter II

Allocation of PPIS Grant Awards



Since the inception of the grant program in 1989, EPA has awarded approximately \$24 million through 1993. Grant recipients and other partners (e.g., local governments, industry) have supplied over \$16 million in matching funds for a total funding amount of approximately \$40 million.

This chapter overviews the distribution of PPIS funds from 1989 to 1993 and is divided into the following sections:

- Organizations funded;
- Types of programs funded; and
- Distribution of grant funding by EPA Region and state.



A. Organizations Funded

Applicants eligible for PPIS funding include:

- The 50 states;
- The District of Columbia;
- The U.S. Virgin Islands;
- The Commonwealth of Puerto Rico;
- Any territory or possession of the United States;
- Any agency or instrumentality of the states, including state universities; and
- Federally recognized Indian tribes.

Although local governments, private universities, private non-profits, private businesses, and individuals are ineligible for PPIS funding themselves, EPA strongly encourages them to team up with eligible applicants in developing proposals.

Over the 5-year grant period, PPIS funds were distributed to four categories of recipients:

- **State environmental/health agencies**, such as state departments of environmental quality

and protection and state health departments;

- **Other state agencies**, such as state departments of education;
- **Universities** that manage research-oriented grants, work through extension programs, or operate their own technical assistance programs;
- **Indian tribes**, which include the Navajo EPA, the All Indian Pueblo Council, and many individual tribes; and
- **Other** nonstate groups or organizations, such as the New England Waste Management Officials Association (NEW-MOA), the District of Columbia, and the American territories.

State environmental and health agencies received the most funding by far (see Exhibit II-1); their 5-year total reaches close to \$18 million, or 71 percent of all PPIS funds. Universities received the second greatest portion of grant monies (approximately \$3 million, or 13 percent of total funds). Other state agencies received 7 percent of total funding, and Indian tribes and other nonstate organizations (such as regional organizations and territories) received 3 and 6 percent of PPIS grant funds, respectively.

The distribution of PPIS funding to these categories of recipients fluctuated somewhat over time. State environmental and health agencies, however, accounted for the majority of all grant monies issued each year. In 1989, PPIS grants were distributed almost exclusively to state environmental and health agencies with only one

exception: the New England Waste Management Officials Association received a \$305,525 grant to develop the Northeast States Pollution Prevention Roundtable. Over time, other organizations began to receive more funding. For example, in 1990, university programs received a substantial quantity of funding and have continued to receive PPIS monies every year since. Not until 1992 did Indian tribes begin to receive funding to establish pollution prevention programs. In 1993, the amount of grant monies awarded to tribal organizations more than doubled from the previous year and exceeded the funds issued to all other nonstate groups. In addition, the number of tribal organizations receiving PPIS funds increased from one tribe in 1992 to seven in 1993.



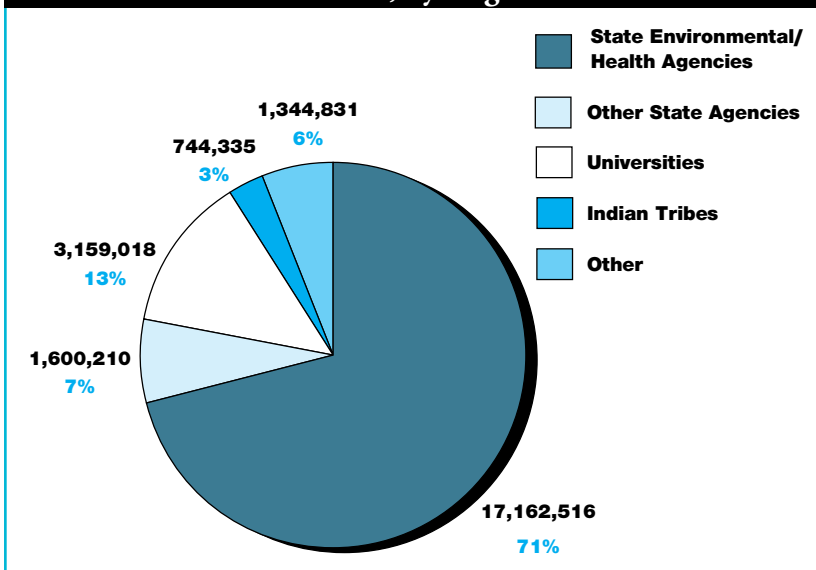
B. Types of Programs Funded

As described in Chapter I, one of the initial goals of the grant program was to fund states to provide technical assistance and outreach to targeted industries on pollution prevention. EPA designed the program to concentrate early efforts on publicizing pollution prevention, believing that businesses would reduce waste voluntarily once they learned the benefits and cost savings associated with pollution prevention. Thus, voluntary programs that either provide their services (e.g., technical assistance audits, training, presentations) upon request or offer them to industry and the public on an elective basis received the most funding. These programs accounted for 62 percent of PPIS funds awarded between 1989 and 1993.

As state programs gained experience, they discovered that to build successful programs they

Exhibit II-1

Distribution of PPIS Funds, by Organization

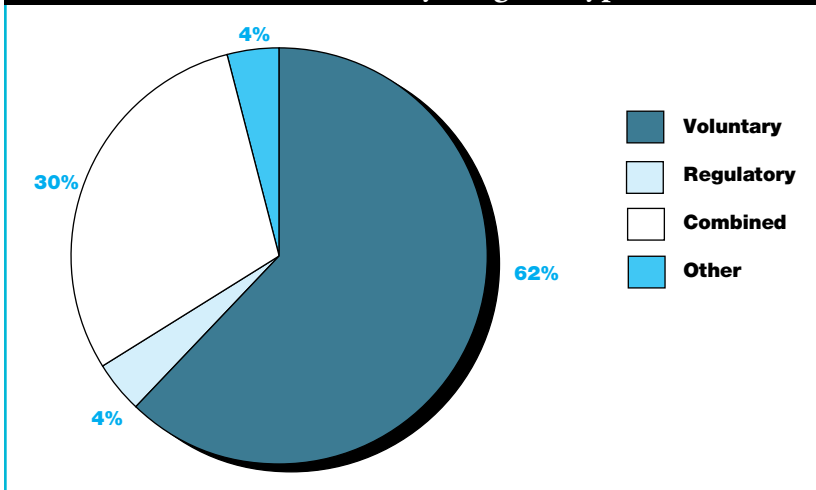


would need to better educate their own regulatory staff. By training state regulatory staff, many states believed that they could provide pollution prevention incentives through regulatory mechanisms. Thus, many programs contained both voluntary and regulatory elements. For example, the Connecticut Department of Environmental Protection (DEP) used its 1991 PPIS grant to fund several outreach activities, such as making presentations to industry, developing fact sheets, and training permit writers in pollution prevention. Over a quarter of PPIS funds supported these combined programs. Since most grantees combined regulatory integration projects with voluntary activities, strictly regulatory programs received only 4 percent of total grant monies.

PPIS monies also funded research programs (4 percent). For example, the Iowa Waste Reduction

Exhibit II-2

Distribution of PPIS Funds, by Program Type



Center studied the impact of toxic waste on stream life as part of a project to identify and reduce toxic industrial discharges to small wastewater treatment systems. Exhibit II-2 shows the distribution of PPIS grants among various program types.

From 1989 to 1993, funding allocated for regulatory integration

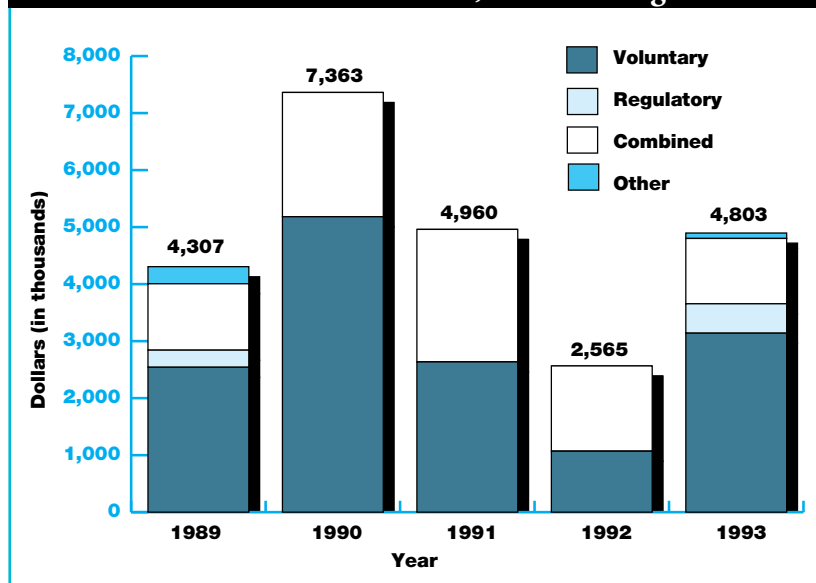
projects increased (see Exhibit II-3). In 1993, a total of \$516,000 was allocated for four regulatory projects (e.g., attempts by the Louisiana Department of Environmental Quality [DEQ] to incorporate pollution prevention into inspections), while in 1989, only one grant of \$300,000 was allocated for similar projects.

Athough the 1993 allocation supporting regulatory integration initiatives is not substantially higher than the 1989 award, the 1993 grants were awarded to multiple projects across several states rather than to one program. The trend over the first five years suggests a movement away from strictly voluntary or technical assistance and outreach programs and toward increased regulatory integration. This trend continued throughout 1994 and 1995: nearly 20 percent of PPIS grants awarded in each of these years supported regulatory integration projects.



Exhibit II-3

Nature of PPIS Grants Over Time, 1989 Through 1993



C. Distribution of Grant Funding by EPA Region and State

Exhibit II-4 illustrates the total PPIS funding by year. EPA funding peaked in 1990, when over \$7 million in grant monies were awarded. Funding was more moderate in 1991 (approximately \$5 million), a trend that continued in 1993. This gradual increase in funding over the 1989 level was, however, broken in 1992, when only \$2,565,000 was awarded. During 1992, EPA reduced the PPIS grant funding to support pollution prevention in other targeted sectors in the states. For example, EPA awarded \$450,000 to five states to support pollution prevention at publicly owned treatment works (POTWs).

Just as the total amount of PPIS dollars distributed each year has increased, so has the total number of grants awarded. In fact, the number of grants awarded annually has increased substantially from 14 in 1989 to 52 in 1993. Within the past five years, EPA has awarded grants to 124 organizations.

At the outset of the program, EPA funded fewer organizations with larger grants (most were approximately \$300,000). As EPA began funding more programs per year, the amount of each grant awarded decreased. Whereas the majority of the early grants provided seed money for nascent pollution prevention programs, more recent grants have helped states implement special pollution prevention projects.

Exhibit II-4

Total PPIS Funding by Year

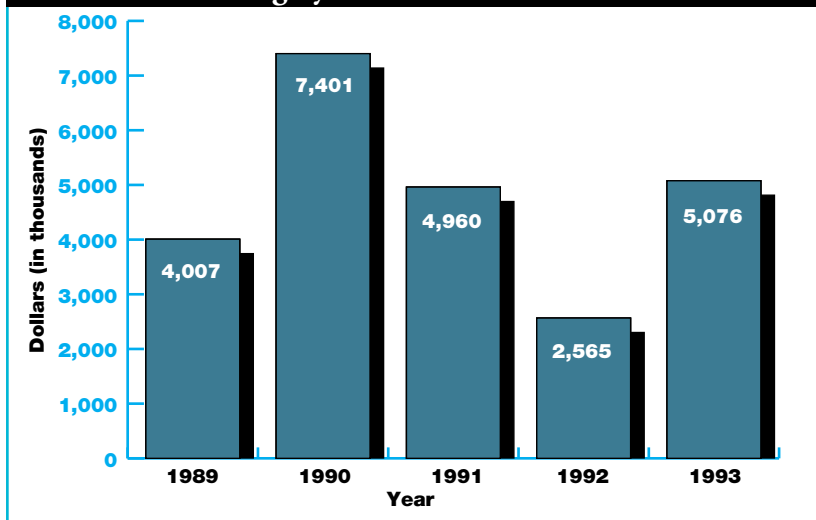


Exhibit II-5 depicts the Regional distribution of PPIS funds from 1989 through 1993. With the exception of Region 1, total grant funding by Region was relatively equal. Most Regions received between \$1 and \$3 million in total grant funding. Region 1 received slightly more grant funding than other states since many of its states have been on the forefront of the pollution prevention movement. States in this Region received several early grants to test innovative ideas. This trend continued over the years as EPA continued to fund the expansion of these programs.

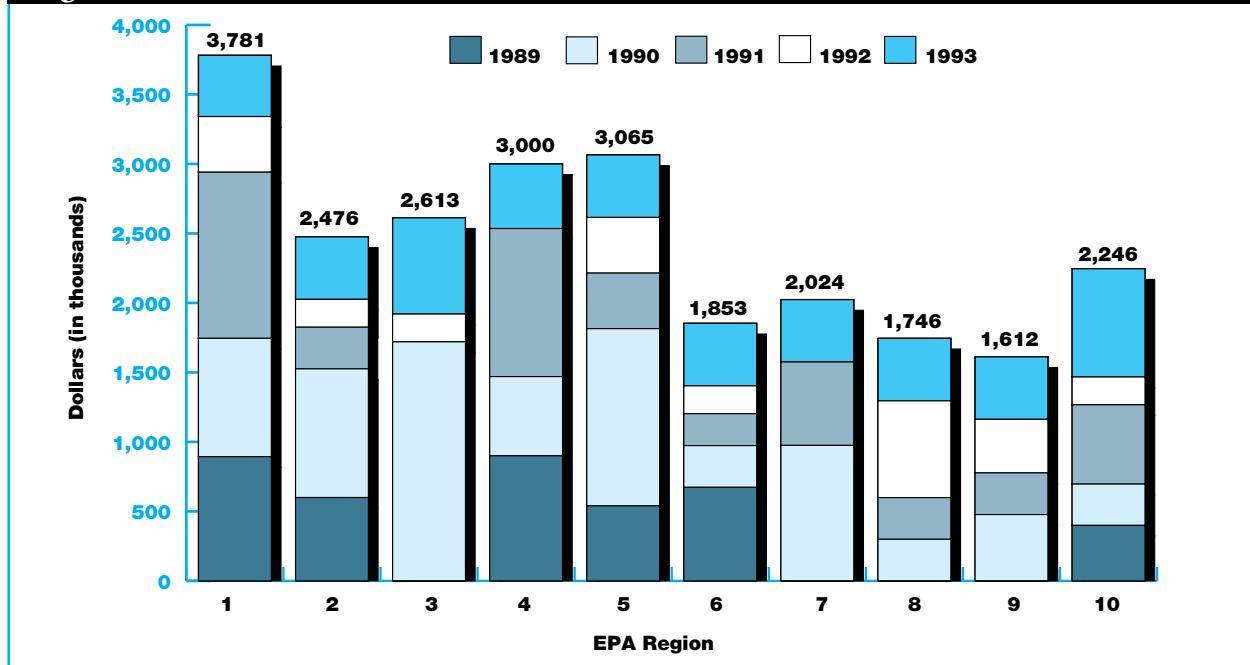
The distribution of grant funding in any particular year was less balanced. An understanding of the award process can explain disparities among the EPA Regions in any given year. In the first four years of the program, EPA Headquarters distributed the grants through a centralized, competitive process. An expert review panel (consisting

of Headquarters and Regional staff) evaluated all proposals. For the 1993 grants, EPA decentralized the grant award process and delegated responsibility to each Regional office to enable the Regions to fund regional pollution prevention priorities.

EPA awarded some level of PPIS funding to all 50 states over the 5-year period under consideration. Early leaders, such as New York and New Jersey, received proportionately more funding due to their pioneering efforts developing innovative pollution prevention programs. New York and New Jersey, as well as Rhode Island and Massachusetts, were among the first states in the country to establish broad-based pollution prevention programs. Consequently, these states applied for and received funding in the first year of the PPIS program. These states continued to build and expand their pollution prevention programs, thereby receiving addi-

Exhibit II-5

Regional Distribution of PPIS Funds



tion grant support in subsequent years. Note that, in addition to state environmental agencies, other groups such as state universities, Indian tribes, and other state government organizations received funding in each of the states receiving the most funding. Exhibit II-6 shows the five states that received the most funding, accounting for over 15 percent of total funding.

In contrast, other states received more limited funding from 1989 to 1993. For example, New Mexico received \$58,000 over the entire 5-year period. Similarly, Hawaii received \$185,000 in total funding between 1989 and 1993. In addition to the reasons given above, disparities in funding to individual states may be attributed to several factors, including:

- States' budgets could not meet the matching requirements necessary for a large PPIS grant,

particularly when the matching requirement was raised by Congress to 50 percent in 1992;

- Some states are more industrial than others, making pollution prevention a more salient issue and thus prompting requests for large grants; and
- The competitive award process used by EPA before 1993 gave an advantage to states who had

begun their pollution prevention programs first.

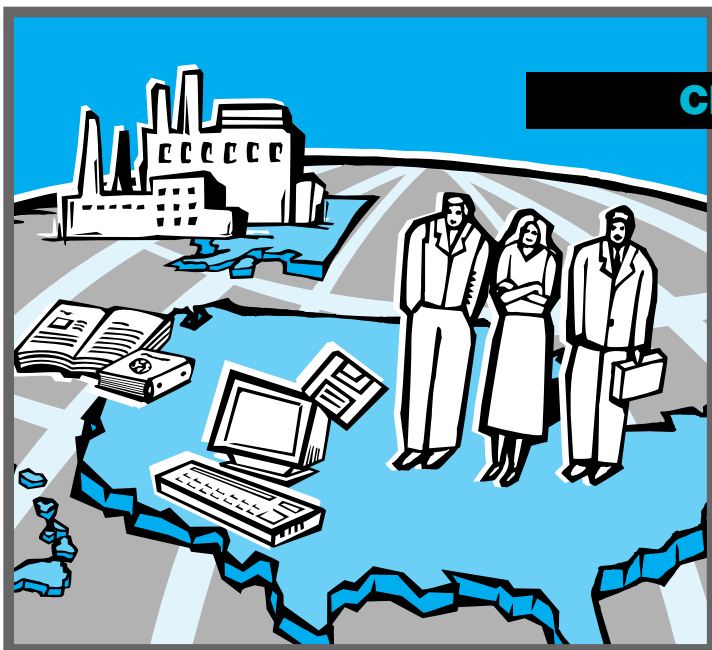
Appendices A-C show the distribution of funding to each state by Region and include detailed breakdowns of annual funding awards.



Exhibit II-6

Top Five Recipients of Total Funding, 1989 Through 1993

State	Number of Grants	Total Funding
New York	6	\$1,342,548
New Jersey	4	\$1,132,944
Rhode Island	3	\$800,000
Massachusetts	5	\$791,294
Iowa	4	\$724,378



Chapter III

Summary of PPIS Grant Activities

This chapter documents the wide range of pollution prevention activities implemented by PPIS grantees. In the time period of the study, PPIS grant monies funded nearly 5,000 assessments, more than 850 workshops, and the development of 370 pollution prevention case studies. In addition, PPIS grantees' efforts reached companies in 35 industry sectors, as well as many other groups. Such a breadth of activities illustrates not only the efforts of grantees to disseminate the pollution prevention message to a wide and varied audience, but also the aggressive role states have assumed at the forefront of the pollution prevention movement. The diversity of projects implemented also indicates that grantees addressed several different areas of need within their particular states, thereby fulfilling the intent of the 1990 Pollution Prevention Act.

According to the grantees interviewed for this study, PPIS grants also helped businesses improve the environmental and economic effects of their operations. In some cases, PPIS grantees's efforts achieved substantial cost savings for businesses. For example:

- Businesses that received assistance from Kentucky Partners were able to save approximately \$3 million annually by implementing pollution prevention measures;¹
- Florida's Waste Reduction Assistance Program (WRAP) has saved businesses \$3.7 million;²
- Companies receiving technical assistance from Alabama's Waste Reduction and Technology Transfer (WRATT) program save an average of \$160,000 each;³ and
- Iowa WRAP has helped businesses in Iowa save more than \$1.5 million annually.⁴

In terms of environmental benefits, some PPIS grantees demonstrated significant results. For example:

- Tennessee showed a decrease in toxic releases of up to 42 percent;⁵
- West Virginia experienced a 53-percent decrease in toxic releases;⁶ and
- Rhode Island's PPIS program eliminated 3.4 million pounds of liquid waste and 20,000 pounds of solid waste.⁷

This chapter describes in detail the groups targeted and activities conducted.



A. Targeted Groups

The 1990 Pollution Prevention Act required that all grants awarded through the matching grant program be targeted to the groups most in need of pollution prevention assistance. Overall, the majority of PPIS grants have been targeted to small and medium-sized businesses and industries, on the assumption that these organizations often do not have the resources to identify and evaluate pollution prevention opportunities on their own. From 1989 through 1993, PPIS grants reached over 35 industry sectors, as well as nonindustrial groups such as universities, Indian tribes, trade associations, and schools. The industry sectors most commonly targeted by PPIS grants include:

- Automotive;
- Printing;
- Dry cleaning;
- Metals manufacturing;
- Agriculture; and
- Painting.

For a detailed breakdown of groups targeted by PPIS grantees see Appendix D.

The grantees commented that by focusing on high-priority industry sectors, they can target their efforts and resources effectively. Many grantees believe that educating industry about stopping the generation of waste at its source is the key to pollution prevention. The grantees also indicated that targeting nonindustrial groups, such as schools and environmental groups can also be useful for disseminating information and instilling the pollution prevention ethic in the general population. As shown below, PPIS-funded activities from 1989 to 1994 attempted to address a wide range of audiences by implementing a diverse mix of program activities.



B. Range of Activities Conducted

This section describes the range of activities conducted by PPIS grant recipients.⁸ Categories of activities include:

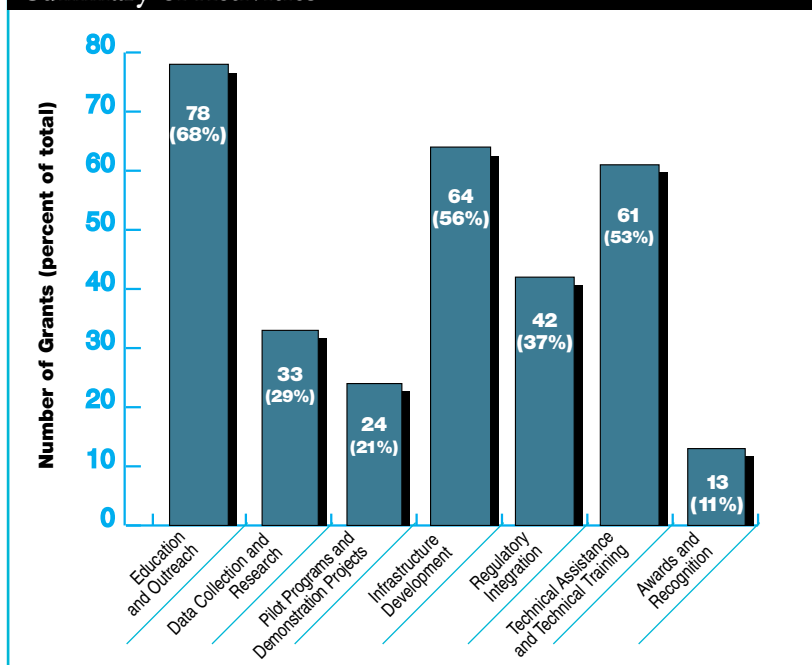
- Education and Outreach;
- Data Collection and Research;
- Infrastructure;
- Technical Assistance and Technical Training;
- Pilot Programs and Demonstration Projects;
- Awards and Recognition; and
- Regulatory Integration.

Exhibit III-1 shows the percentage of grant recipients implementing each type of activity. The remainder of this chapter describes each activity in detail.



Exhibit III-1

Summary of Activities



B.1 Education and Outreach

As shown in Exhibit III-1, nearly all programs dedicate some resources to education and outreach activities. These initiatives, designed to heighten public awareness of pollution prevention, are implemented through a variety of projects, as illustrated in Exhibit III-2.

As shown in Exhibit III-2, workshops and seminars are the most frequently implemented form of education and outreach activities, conducted by 66 grantees (57 percent). These workshops may educate participants on topics such as conducting pollution prevention audits, current hazardous waste regulations, and cost savings through pollution prevention.

Presentations are also an extremely popular outreach activity, conducted by 41 grantees (36 percent). Presentations frequently target various industry sectors (see Appendix D for a description of industries targeted), state environmental managers, and trade associations. Topics are similar to those of PPIS-funded workshops and seminars. The prevalence of these activities is most likely attributable to the fact that they are quick, easy ways to directly disseminate pollution prevention information to businesses, industries, and the general public.

Grantees also developed and distributed a large quantity of printed outreach materials such as case studies and fact sheets. These materials might document the pollution prevention and cost-savings successes of companies, or provide

general suggestions for how facilities can reduce hazardous waste at its source. Grantees noted that outreach documents are relatively simple methods of sharing pollution prevention information.

Some grantees have placed particular emphasis on such education and outreach areas as developing targeted materials or sponsoring teleconferences. For example, the Virginia Department of Environmental Quality's (DEQ's) Office of Pollution Prevention (OPP) has taken a broad approach to developing outreach materials and tries to tailor each item for its intended audience. OPP has produced two videos—one for medium-sized lithographic printers and one for manufacturers in Virginia—which have been distributed to over 450 companies throughout the

state. In addition, OPP used PPIS funds for two large pollution prevention posters targeted to automotive industries and general industrial audiences. The program has distributed over 10,000 posters to date.¹⁰

The Montana State University Extension Service (MSUES) targeted its 1992 and 1993 PPIS grants to the automotive and drycleaning industries. To educate these industries about pollution prevention opportunities, MSUES has produced a set of fact sheets, a video, and vendor and product lists targeted to each industry. In addition, the grantee conducted two demonstration assessments and held 22 workshops (attended by a total of 443 people) for the industries.¹¹

Two of the more innovative outreach materials that MSUES developed are self-assessment checklists

Exhibit III-2

Education and Outreach Summary

Education and Outreach Activities	Number of Grants	Number Developed With PPIS Funds
Brochures/Pamphlets/ Fact sheets	55	180
Case studies	36	370
Curricula	12	63
Conferences/ Teleconferences	57	81
Directories	7	8
Guidance materials/ Worksheets	57	91
Newsletters/Articles	33	84
Presentations	41	769
Public service announcements	4	175 ⁹
Videos	22	73
Waste exchanges	5	6
Workshops/Seminars	66	858

for drycleaners and automotive workers. The checklists assist the targeted groups in evaluating pollution prevention opportunities in their facilities and provide helpful hints for hazardous waste avoidance.

The Tennessee Department of Environment and Conservation, through the University of Tennessee's Center for Industrial Services, concentrated its PPIS outreach efforts through video teleconferencing. The program developed and produced three national teleconferences on the following pollution prevention topics: solvents alternatives, painting challenges of the 1990s, and promotion of landfill alternatives for solid waste. Each teleconference was downlinked by at least 40 states, thereby reaching 3,000 people per event. According to the grantee, the teleconferences were very well received. Based on feedback from the attendees, the Department of Health and Environment believes that the conferences had a significant impact on pollution prevention, not only in the state but nationally as well.¹²

Newsletters also are a popular way for state pollution prevention programs to disseminate information to industry, other programs and agencies, and other states. Erie County, for example, sends its newsletter to both small and large businesses in targeted industry groups. The county developed its mailing list from community sources including chamber of commerce directories, business indexes, and standard "yellow pages." In addition, the county used regulatory databases to target larger businesses and industries.¹³

Frequently, newsletters feature case studies of companies that have benefitted from pollution prevention program efforts, articles about pertinent regulations and legislation, and notices of upcoming educational and outreach events. These newsletters are generally free to interested parties within the grantees' states and offered either at no cost, or for a nominal fee, to out-of-state subscribers. Approximately 25 percent of PPIS grant recipients published newsletters, many with remarkably high circulations.

For example, Kentucky Partners, Kentucky's state pollution prevention center, published over 27 issues of their newsletter, "The Waste-Line," and distributed each issue to a mailing list of approximately 7,000 people.¹⁴ Similarly, the Erie County Department of Environment and Planning distributed five industry-specific and one general pollution prevention newsletter to 4,500 people quarterly.¹⁵ Finally, the New York State Department of Environmental Conservation's newsletter, published twice yearly, is distributed to a mailing list of 8,000 people.¹⁶



B.2 Data Collection And Research

PPIS supports a variety of data collection and research initiatives to evaluate the usefulness of current pollution prevention methods and to increase knowledge about new pollution prevention technologies. The research projects PPIS has funded may eventually help grantees further pollution prevention efforts, both in their states and nationally. These efforts frequently include the activities shown in Exhibit III-3.

PPIS funds support research both in the laboratory and in the field. For example, inspired by the terms of the Montreal Protocol, which will effectively eliminate the use and manufacture of chlorofluorocarbon (CFC) based cleaning solvents by 1995, the Navajo Nation is researching alternative cleaning solvents. The proposed research and development work will be performed to identify, quantify, and implement the best alternatives to chlorinated and fluorinated cleaning industrial solvents. The goal is

Exhibit III-3

Data Collection and Research Summary

Data Collection and Research Activities	Number of Grants	Percent of Total Grantees
Data collection and analysis	23	20
Database development	16	14
Studies	12	10
Surveys	19	17

to develop an alternative, environmentally benign industrial solvent to eliminate industrial contaminants such as solder flux, mold release, resins, curing agents, cover coats, waxes, greases, oils, lubricants, and other similar contaminants found in a typical manufacturing environment. The Navajo Nation hopes that this research will eventually help prevent pollution within Navajo lands as well as in other areas across the country.¹⁷

On the other hand, Rhode Island's PPIS-funded research focuses more on the issues affecting one specific industry—the textile industry. The research, conducted by the Rhode Island Department of Environmental Management (DEM), included the following research components:

- Researching and identifying regulatory and policy initiatives that would encourage textile companies to incorporate source reduction measures and technologies into their process and facility operations;
- Identifying Rhode Island textile plants that represent the greatest potential risk to health and the environment through a comprehensive statewide survey, analysis of chemical release and offsite transfer data, and a review of the regulatory history of facilities;
- Researching, identifying, and evaluating cost-effective management and process operational methods, material substitutions, and technologies that could be used to reduce air/water releases and offsite transfers in facilities that represent the highest potential environmental risk; and

- Analyzing textile industry discharges for toxicity.¹⁸

The DEM hopes that these research endeavors will expand the knowledge base and technical resources available to Rhode Island textile companies to reduce pollutants at their source.¹⁹

The focus of the West Virginia Department of Environmental Protection's PPIS grant is to produce the annual *West Virginia Scorecard*. *Scorecard* is a document designed to provide the public with an annual review and analysis of Toxic Release Inventory (TRI) data from all reporting industries, highlighting the 28 major chemical companies in the state. It examines trends in toxic chemical releases across the state by region, industry sector, and medium of release. Information on the release of known or suspected carcinogens as a subset of total releases is also provided.

Collection and analysis of the data are voluntary efforts jointly conducted by chemical industry representatives, state environmental personnel, nongovernmental organizations, and citizen activists. In addition to reporting emissions data, companies participating in the *Scorecard* project also provide narrative statements about their facilities, in which they enumerate their goals for environmental performance and are given the opportunity to explain how these goals were achieved or why they may not have achieved their release reduction goals. West Virginia believes that *Scorecard* assists both the public and industry in identifying opportunities for further reductions

in the generation, treatment, and disposal of toxic chemicals.²⁰



B.3 Infrastructure

A major goal of the PPIS grant program was to help states develop the infrastructure necessary to establish a sustainable pollution prevention program. Infrastructure includes time and resources spent on hiring and training staff, developing legislation and regulations that promote pollution prevention, evaluating program effectiveness, and securing funding for the program's future endeavors. EPA believes that developing program infrastructure is critical because it ensures a solid base and continuous support for a state's pollution prevention efforts. Exhibit III-4 lists the range of infrastructure activities conducted through the PPIS grant program.

PPIS funding enabled grantees to build program infrastructure by:

- Hiring 60 staff members;
- Hiring and training 70 interns; and
- Providing 40 internal training sessions.

In addition, many grantees established an advisory committee or workgroup to oversee the establishment of the pollution prevention program. These committees consist of staff from all program areas to give the pollution prevention program a true multimedia perspective and to promote linkages between the programs.

A large component of Georgia's PPIS-funded program involved a

series of task force and advisory committee meetings, which eventually led to the institutionalization of the program in 1993. Three different groups were central to Georgia's infrastructure-building endeavors. One group, the Environmental Protection Division (EPD) New Industry Team, was used to foster a working relationship with Georgia businesses. The team informed new industries of the state's pollution prevention efforts and of available technical assistance to encourage new industry prospects to design facilities that incorporate pollution prevention and waste minimization into their operations.

Another Georgia group supported by PPIS funding was EPD's Pollution Prevention Strategy Task Force. Throughout its 16 meetings, the task force developed EPD's strategy for integrating pollution prevention into regulatory programs. Eleven multimedia staff participated in a survey to assess EPD-wide pollution prevention training, information distribution, and relevant regulatory actions. The result of the task force's efforts was a

strategy that included an emphasis on a multimedia pollution prevention approach to regulatory action, increased staff training, and creation of a new EPD culture that promotes pollution prevention over pollution control.

EPD's Pollution Prevention Advisory Committee, a group consisting of representatives from several key organizations in state government, was active in evaluating the pollution prevention efforts of EPD. After frequent meetings, the committee produced a matrix of statewide pollution prevention and waste minimization activities. The matrix examined activities across seven sectors of the division, assessed each one, and assigned an effectiveness rating. The committee then made recommendations to improve the function of Georgia's pollution prevention efforts.

The efforts of EPD's various committees served to create and strengthen its pollution prevention program. In 1993, legislation was passed creating the Pollution Prevention Assistance Division (P2AD) in the Georgia Department of Natural Resources.

According to the grantee, "whereas the purpose of the PPIS grant was to offer seed money to states to develop pollution prevention programs, this [legislation] is a culmination of efforts initiated over the last four years. The activities implemented by EPD under this grant provide a strong foundation for the new Pollution Prevention Assistance Division."²¹ Long-term funding has also been addressed in creating P2AD. Although it will receive some funding from the federal government, the new division is primarily funded through state-appropriated funds and solid waste and hazardous waste generator fees.²²

Other grantees have taken different approaches to developing program infrastructure. For example, the focus of the Alabama DEM's 1991 PPIS grant was the institutionalization of the Waste Reduction and Technology Transfer (WRATT) program. As a result of PPIS funding, the WRATT program, Alabama's free, nonregulatory vehicle for technical assistance, became the WRATTLER Foundation, a stand-alone, non-profit organization. In institutionalizing the WRATT program, Alabama enabled its technical assistance program to receive private funding; the WRATTLER Foundation is now funded 50 percent by state monies and 50 percent by private funds. WRATTLER receives its private funding primarily from facilities that donate to the foundation after saving money by implementing recommendations made during free waste audits. In addition, the Foundation has applied for several grants from private foundations and to date has

Exhibit III-4

Infrastructure Summary

Infrastructure Activities	Number of Grants
Securing funding sources	9
Hiring interns	15
Developing legislation	8
Developing pollution prevention policy	15
Program evaluation	30
Hiring staff	25
Training staff	32
Forming workgroups/committees	41

received \$350,000 in grant funding. With the WRATTLER Foundation supporting it, the WRATT program is able to continue to provide technical assistance to Alabama businesses.²³

The activities of the WRATT program are also infrastructure oriented. For example, one goal of the program was to develop strategies for 1) promoting and facilitating the incorporation of pure pollution prevention techniques in the planning and design process for new and expanding companies; 2) making technical assistance more relevant and more accessible to small businesses in Alabama; 3) improving public awareness of waste reduction issues; and 4) measuring the effectiveness of pollution prevention activities in reducing waste generation. Another infrastructure element of Alabama's program focused on program evaluation. The DEM commissioned two studies to determine the effectiveness of the program's technical assistance efforts and the associated cost savings to participating businesses. Further details about the WRATT program's measurement initiatives, as well as the efforts of other PPIS grantees to measure program success, are presented in Chapter IV.



B.4 Technical Assistance and Technical Training

A major component of many PPIS-funded programs is technical

assistance. Grantees believe that through onsite visits, assessments, hotline and clearinghouse information, and training, state pollution prevention programs can help industry and other groups better understand and incorporate pollution prevention technologies into their everyday operations. Exhibit III-5 shows the technical assistance and training activities that PPIS funds support.

A primary goal of the PPIS grant program was to allocate resources to the states to provide technical assistance to businesses in accordance with the 1990 Pollution Prevention Act. Many states provided technical assistance through onsite waste assessments or audits. In many cases, PPIS technical assistance programs offer confidential, onsite pollution and waste assessments for both large and small businesses. These assessments take place outside the regulatory environment, and participation on the part of businesses is strictly voluntary. Grantees believe that through the assessments, businesses learn how to save money, increase effi-

ciency, and build a good public image. During a waste assessment, engineers review all business operations to uncover potential waste reduction strategies and opportunities. Later, the company receives a detailed report that identifies and evaluates waste reduction opportunities and provides specific recommendations for action. The decision to implement any recommended option is entirely the decision of the company.

Some grantees have made onsite visits a central component of their pollution prevention programs. For example, the Washington State Department of Ecology has performed site assessments of 1,700 businesses, including lithographers, screen printers, and photoprocessors.²⁴ The South Carolina Department of Health and Environmental Control conducted more than 250 assessments.²⁵ By providing onsite assistance, many PPIS grantees have helped businesses realize substantial cost savings. For example, the Massachusetts Office of Technical Assistance helped companies save

Exhibit III-5

Technical Assistance and Technical Training Summary

Technical Assistance and Technical Training Activities	Number of Grants	Number Developed With PPIS Funds
Assessments/Audits/Site visits	61	4,700
Bulletin boards	5	5
Clearinghouses/Libraries	32	32
Grants	4	22
Hotlines	20	20
Technical training	13	55

an annual average of \$35,000 per company.²⁶ Kentucky Partners helps Kentucky businesses save an estimated total of \$3,000,000 per year.²⁷ More results of this nature are presented in Chapter IV.

Other states have taken innovative approaches to site assessments. With its 1989 PPIS grant, the Georgia Environmental Protection Division initiated the Pollution Prevention Mentor (PPM) program, whereby EPD employed retired engineers, working in conjunction with graduate student teams, to provide industry with the technical expertise and support necessary to implement source reduction techniques and technologies. The teams spent five days on site per facility, then submitted pollution prevention recommendations. The final product of these visits was a site-specific report outlining source reduction options for each company. The PPM Program conducted over 30 assessments.²⁸ With later grants, the Georgia Hazardous Waste Management Authority (GHWMA) started the Seniors' Assessment Technical Assistance Program (SATAP), once again combining the talents of retired engineers with graduate students at Georgia Technology Institute. The SATAP program conducted 20 site assessments.²⁹ Many other states, such as Tennessee, Florida, Alabama, Vermont, and New Hampshire have also enlisted the help of retired engineers for their technical assistance programs.

Several grant recipients operate clearinghouses, which provide businesses and the general public with technical information on an as-

requested basis. For example, the clearinghouse that the Virginia DEQ maintains houses more than 3,000 books, articles, papers, and videos that cover all aspects of pollution prevention. The clearinghouse is open to other organizations, and DEQ is arranging for the information clearinghouse index to be available online so that the library is accessible for searching and requesting by other department staff and the general public. DEQ hopes that this capability will greatly enhance both the utilization and the usefulness of the information clearinghouse.³⁰



B.5 Pilot Programs And Demonstration Projects

EPA encourages states to initiate pilot and demonstration projects that test and support innovative pollution prevention approaches and methodologies. The funding of pilot and demonstration projects allows EPA and the states to learn how new initiatives will work before businesses or the government invest a significant amount of time and resources. Twenty-one percent of PPIS grants were used to fund either demonstration or pilot projects that tested innovative pollution prevention techniques. Some projects were conducted by the grantees themselves, while others were carried out by contractors or through minigrants channeled to industry through state programs.

Many of these projects have demonstrated remarkable successes, including a project conducted by Cornell University's Water Resources Institute. The Water Resources Institute used its 1990 PPIS grant as seed money for a holistic farm planning demonstration project aimed at nonpoint source pollution in agriculture. The project was the foundation of what is now a \$35 million, statewide, multiagency initiative for New York, and has been adopted as a model for many other states as well. The grantee hopes that this project will assist water districts in maintaining water quality through watershed control rather than through the installation of costly filtration systems. The project was piloted in upstate New York, where it is expected to save local water systems more than \$5 billion in construction costs and \$300 million in annual operating costs (related to a proposed filtration system) by encouraging the adoption of farming practices to protect water quality.³¹

Two PPIS grants were awarded to assist in the formation and piloting of Wisconsin's Farmstead Pollution Potential Assessment System (Farm*A*Syst). Farm*A*Syst, a joint effort between EPA and the U.S. Department of Agriculture (USDA), was designed to help farmers and rural residents voluntarily assess well water pollution risks at the farmstead (house, farm buildings, and surrounding land). The system identifies best management practices and structures at a specific site that present pollution risks. It then recommends actions to reduce or elimi-

nate identified pollution risks. Ultimately, the system is intended to increase users' knowledge and understanding of their farmstead environment, as well as existing policies, regulations, and recommendations that relate to their activities and structures, with the goal of helping users take voluntary actions to reduce and prevent pollution risks. The grantee used PPIS funds for initial development of the assessment tool, which consists of 12 workshops and 10 fact sheets. Using PPIS funds, the program was first piloted in Wisconsin and Minnesota. After 3 years, all 50 states have now developed a Farm*A*Syst program based on the Wisconsin model.³²



B.6 Awards and Recognition

Some PPIS grantees have instituted awards programs to recognize outstanding achievements, usually by industry, in the realm of pollution prevention. The winners generally receive free publicity for their efforts and many programs have developed case studies based on the accomplishments of award winners.

Certain programs have placed particular emphasis on awards. Alaska's Office of the Governor used its 1991 PPIS grant to establish a "Green Star" program that targets businesses and industries across the state. To receive the Green Star, participants in the program must complete a minimum of 12 of 18 possible source reduction standards. Six of the standards

are required for a company to receive its Green Star, while the remaining six can be selected from a pool of 12 possibilities. Examples of the standards include double-sided copying, yearly waste assessments, and assisting at least one other business in becoming a Green Star member. To date, over 183 businesses are enrolled in the Green Star program, and 40 have earned their Green Stars.³³



B.7 Regulatory Integration

Many states have chosen to use PPIS funds to integrate pollution prevention into their regulatory programs. While strictly voluntary initiatives focusing on outreach and technical assistance characterized the activities of most earlier PPIS

grantees,³⁴ regulatory integration is a growing trend. Exhibit III-6 shows the approaches that grantees have employed to inject pollution prevention into state regulatory structure.

Compared with the level of regulatory integration in 1989, several states have made great strides toward regulatory integration with PPIS funding. For example, one of the primary objectives of the Illinois EPA (IEPA) was to automatically integrate pollution prevention concepts in IEPA permit decisions, compliance agreements, and regulatory actions across all media programs. A major goal of the grant was to produce a pollution prevention guidance manual for IEPA permit and inspection staff in all bureaus. The manual currently contains instructions useful to Agency personnel but will continue to evolve as successful pollution prevention projects occur and are documented.

Exhibit III-6

Summary of Regulatory Activities

Activity	Number of Grants	Percent of Total Grantees
Incorporate pollution prevention reviews in permitting	15	13
Perform mandatory waste audits	2	2
Incorporate pollution prevention into enforcement and compliance orders	12	10
Develop pollution prevention checklists for inspectors	12	10
Develop pollution prevention policy statements regarding regulatory integration	7	6
Place pollution prevention requirements in ordinances and regulations	3	3

Thus far, the manual has been used to train over 200 technical and legal staff members in seven field offices and headquarters. IEPA also drafted a guidance document, based on U.S. EPA guidance, for incorporation of pollution prevention and Supplemental Environmental Projects (SEPs) into enforcement settlements.

IEPA also launched a voluntary technical assistance program for industry whereby participating companies worked with the agency on pollution prevention initiatives. In return, IEPA provided both technical regulatory assistance (including expedited permits and variance support) and adjusted standard support. Over 130 companies participated in the program.³⁵

According to the grantee, “Illinois regulators and companies forged a more cooperative working and learning relationship as a result of the PPIS grant. Permit writers, inspectors and [lawyers] are beginning to incorporate P2 into their work and learn more about the intricacies of manufacturing processes.”³⁶

The Narragansett Bay Water Quality Management District Commission (NBC) provides another example of how pollution prevention ideas can be integrated into state regulations. NBC owns and operates Rhode Island’s two largest municipal wastewater treatment plants. As part of its operations, NBC operates an Industrial Pretreatment (IPT) program that permits, monitors, and regulates industrial and commercial discharges. One aspect of NBC’s 1991 PPIS grant focused on integrating pollution prevention into IPT. The IPT program expanded its policy of referring all noncompliant companies to the NBC’s Pollution Prevention Program for assistance. Furthermore, IPT refers new permit applicants to NBC’s pollution prevention program.

In addition, NBC has incorporated pollution prevention into settlement practices, including implementation of a pollution prevention project to offset assessed fines. To be eligible as a pollution prevention project, a proposal must go beyond compliance and result

in an environmental benefit not currently required by law. This approach presents certain advantages to facility owners who find themselves involved in enforcement action: 1) the use of company funds to purchase and install pollution prevention equipment can result in positive tax consequences, as opposed to the direct payment of fines; 2) the use of pollution prevention equipment can increase efficiency; and 3) the use of pollution prevention equipment often results in decreased water usage, which can substantially lower consumption bills and/or permit fees.

For these reasons, an increasing number of Rhode Island companies are opting to implement pollution prevention projects in lieu of cash settlements. According to the grantee, instituting pollution prevention projects can also benefit a company’s public image while helping the environment.³⁷



¹ Kentucky Partners Fact Sheet, January 1994.

² *Pollution Prevention Incentives for States*, Spring 1994, U.S. EPA.

³ Alabama Pollution Prevention Program Final Progress Report, 1994, Alabama Department of Environmental Management.

⁴ *Pollution Prevention Works for Iowa: Case Studies*, April 1993, Iowa Department of Natural Resources.

⁵ Personal communication in May 1995 with George Smelcer, University of Tennessee Center for Industrial Services.

⁶ *West Virginia Scorecard*, 1992, National Institute for Chemical Studies.

⁷ *Pollution Prevention in Rhode Island: Final Report on DEM’s Pollution Prevention Program*, June 1994, Rhode Island Department of Environmental Management.

⁸ The data presented in this section were gathered through a series of telephone interviews, during which many grantees were unable

to precisely quantify their activities. Many grantees presented numbers for their activities in range format. In such circumstances, EPA used the low end of the range to calculate totals. Therefore, the numbers presented in this chapter most likely underestimate the true level of activity of PPIS grant recipients.

⁹ This number is particularly high because Utah used PPIS funds to develop a 4-month campaign of “Enviro-Minutes.” These Enviro-Minutes were 30- to 60-second spots highlighting what citizens can do to prevent pollution.

¹⁰ 1994 Pollution Prevention Evaluation Report, Virginia Department of Environmental Quality.

¹¹ Personal communication in November 1994 with Karen Bucklin Sanchez, Montana State University Extension Service.

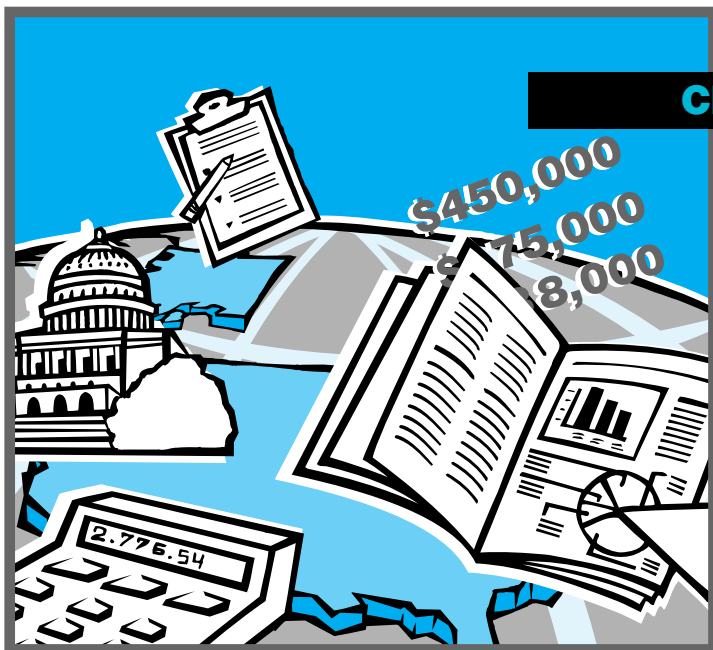
¹² Personal communication in May 1995 with George Smelcer, University of Tennessee Center for Industrial Services.

¹³ Erie County Pollution Prevention Program Evaluation, April 1993.

- ¹⁴ Personal communication in December 1994 with Joyce St. Clair, Kentucky Partners.
- ¹⁵ Erie County Pollution Prevention Program Evaluation, April 1993.
- ¹⁶ Personal communication in November 1994 with John Iannotti, Pollution Prevention Unit, New York State Department of Environmental Conservation.
- ¹⁷ PPIS Grant Assessment Study Report, November 1994, Navajo Nation Environmental Protection Agency.
- ¹⁸ Assessment of Regulatory and Non-regulatory Approaches to Source Reduction in the Rhode Island Textile Industry, Progress Report #3, April 30, 1994, Rhode Island Department of Environmental Management.
- ¹⁹ Assessment of Regulatory and Non-regulatory Approaches to Source Reduction in the Rhode Island Textile Industry, Progress Report #3, April 1994, Rhode Island Department of Environmental Management.
- ²⁰ Personal communication in November 1994 with Dr. Jan Taylor, National Institute for Chemical Studies (West Virginia Department of Environmental Protection's partner in producing the Scorecard).
- ²¹ Georgia Pollution Prevention Incentives for States Grant Final Report, September 1993, Georgia Department of Natural Resources.
- ²² Georgia Pollution Prevention Incentives for States Grant Final Report, September 1993, Georgia Department of Natural Resources.
- ²³ For more information on WRATTLER, call the WRATT Foundation, (205) 386-3633.
- ²⁴ Personal communication in November 1994 with Darin Rice, Washington Department of Ecology.
- ²⁵ Personal communication in November 1994 with Bob Burgess, Center for Waste Minimization, South Carolina Department of Health and Environmental Control.
- ²⁶ The Central Massachusetts Pollution Prevention Project Summary Report, 1992, Massachusetts Office of Technical Assistance.
- ²⁷ Kentucky Partners Fact Sheet, January 1994.
- ²⁸ Pollution Prevention Technical Assistance for Selected Industries Final Report, September 1991, Georgia Tech Research Institute (Georgia Environmental Protection Division's partner).
- ²⁹ Pollution Prevention Incentives for States Program Semi-Annual Progress Report, April 1993, Georgia Hazardous Waste Management Authority.
- ³⁰ 1994 Pollution Prevention Evaluation Report, Virginia Department of Environmental Quality.
- ³¹ "New York City: Case of a Threatened Watershed," Keith S. Porter. EPA Journal, Summer 1994.
- ³² For more information on the Farm*A*Syst program, call 608 262-0024.
- ³³ Personal communication in November 1994 with Sara Peacock, Alaska Office of the Governor.
- ³⁴ Massachusetts Department of Environmental Management received a grant in 1989 to begin integrating pollution prevention into the regulatory program.
- ³⁵ 1989 Pollution Prevention Incentives Grant Final Report, May 1993, Illinois Environmental Protection Agency.
- ³⁶ Activate the State/Lead by Example Final PPIS Grant Report, October 1994, Illinois Environmental Protection Agency.
- ³⁷ Narragansett Bay Commission Pollution Prevention Incentives for States Third Status Report, September 1994.

Chapter IV

Measurement and Evaluation



The purpose of this chapter is to document activities underway in the states to measure the effectiveness of grant-funded activities. This chapter highlights different measurement methodologies used by the grant recipients, without judging the effectiveness of any particular methodology. As stated in the Introduction (Chapter I) of this report, documenting grant-funded activities, including program evaluation and measurement, is EPA's first step in the evaluation of the PPIS grant program. Understanding how states are approaching measurement issues will help EPA determine an appropriate long-term strategy to evaluate PPIS-funded programs. This chapter begins with a description of how EPA traditionally monitors and evaluates its media programs, which provides a context for appreciating the limitations associated with current tracking efforts as applied to the PPIS grant program. The following section summarizes how states have begun to measure the effectiveness of their programs. The final section outlines EPA's efforts to improve program evaluation in the future.



A. Monitoring and Evaluating EPA Media Program Grants

EPA issues approximately \$600 million in grants to the states each year to help the states develop state program capacity and fund ongoing activities. EPA issues these grants under the authority of the environmental statutes such as the Clean Air Act, Clean Water Act, Safe Drinking Water Act, and

Resource Recovery and Conservation Act. In cases where states are willing and able to implement portions of the federally-mandated requirements under these statutes, EPA delegates authority for implementation to the states. Given that the Agency is ultimately responsible for implementation of the law, EPA oversees state activities to ensure that Congressional requirements are met.

Traditionally, EPA has monitored both the federal and the state-delegated programs primarily by counting the number of activities underway. The media programs (air, water quality, drinking water, and waste) track a variety of indicators in the following regulatory based categories:

- The number of permits issued;
- The number of compliance monitoring inspections; and
- The number of enforcement actions or formal consent decrees.

While the names and numbers of indicators tracked differ from program to program, the basic concept remains the same. Programs track concrete administrative actions (e.g., permits, inspections) to ensure that annual targets set by program managers (or the legislature) will be met.

Unlike other environmental statutes, the Pollution Prevention Act of 1990 does not establish a regulatory framework. Consequently, the traditional measurement approach cannot be easily applied to the PPIS program or to the pollution prevention program as a whole. Not only are there no administrative measures, such as permits or inspections, there are also no federal models by which to evaluate state pollution prevention programs. In fact, EPA designed the pollution prevention program to be as flexible as possible to accommodate individual state program needs and priorities.

The traditional “bean-counting” approach is limited by its focus on simple counts of actions, rather than trying to capture environmental results. The Agency recognizes

the need to move forward in measuring results and away from administrative measures. The media programs are grappling with this issue and the difficult questions of how to define environmental results. In the future, EPA hopes to improve the documentation of environmental results achieved through the grant program.

Recently, the National Association for Public Administration (NAPA) studied EPA’s programs and policies, including its approach toward program evaluation. The study found that program evaluations are not consistently conducted by EPA’s media programs. According to the NAPA study, “There is no Agency policy for the frequency of program evaluation or for the conditions under which it is performed.”¹ Furthermore, “The EPA program offices have not taken on the responsibility of conducting their own rigorous [program] evaluations... They do not know how well activities were performed nor how well those activities were evaluated. None of EPA’s ten regional offices has done extensive evaluation work either.”² Given that the Agency lacks “a sound system for conducting program evaluations on a routine basis,”³ it should come as no surprise that EPA has not previously conducted a rigorous evaluation of the PPIS grant program. This assessment study, however, represents an initial step toward understanding and evaluating the PPIS grant program.



B. State Strategies To Measure Effectiveness

While many states are just beginning to evaluate elements of their pollution prevention programs, a few have successfully evaluated their programs. Some state legislatures require the programs to report on activities conducted with state funding. PPIS grantees have used a variety of techniques to evaluate their programs, ranging from surveys to followup site visits. As a result, many states have been able to gauge the level of satisfaction with particular services and a few have been able to quantify the results of their pollution prevention endeavors in terms of actual waste reductions and cost savings.

As detailed in David Wigglesworth’s 1993 book, *Pollution Prevention: A Practical Guide*,⁴ there are both internal and external approaches to measuring progress. The internal approach is a basic accounting or assessment of the program’s activities. The external approach uses input from outside the pollution prevention program to evaluate the program’s services, either from “clients” of the program or independent sources. Generally, methods for measuring PPIS-funded programs fall into three categories:

- Overall evaluation of program effectiveness;
- Evaluation of specific services, either by amount of pollution prevented or by level of customer satisfaction; and
- Measures of activity level.



B.1 Overall Evaluation

Overall evaluations enable state programs to assess the effectiveness of their entire pollution prevention program. Usually, state programs examine a range of data points such as level of client satisfaction, implementation rate of technical recommendations, and amount of pollution prevented. These evaluations can help program managers to understand the effectiveness of different program elements and relationships between the program activities. They can be used to justify funding from state and federal legislatures and help secure private funding by demonstrating effectiveness. One of the drawbacks of conducting such evaluations is that they are often resource-intensive. For this reason, only a few PPIS grant recipients have conducted such an evaluation. Examples of programs that have conducted overall program evaluations include Alabama, Massachusetts, and Erie County, New York.

The Alabama Department of Environmental Management contracted with the Alabama Universities TVA Research Consortium (AUTREC) to provide an evaluation of the Waste Reduction and Technology Transfer (WRATT) program services. The evaluation entailed contacting companies that had received technical assistance from the WRATT program and conducting a survey regarding WRATT services and confidentiality. This process revealed that clients were pleased with the program, and 90 percent would recommend WRATT's services to oth-

ers. AUTREC performed an additional study to determine the cost savings and waste reductions derived from WRATT's services. Information for this study was collected by monitoring companies' progress in implementing WRATT's pollution prevention recommendations. While the data are still preliminary, each company that received technical assistance from WRATT appears to have saved approximately \$160,000. This translates to a 1:60 ratio—for every dollar WRATT spends on conducting the assessments, industry saves 60 dollars.⁵

The Massachusetts Office of Technical Assistance (OTA) also used the services of an outside consultant to evaluate its program. The goal of OTA's PPIS grant was the expansion of the Central Massachusetts Pollution Prevention Project, a relatively new technical assistance program. When the project was complete, the consultant interviewed, by telephone, 110 companies (62 companies within the project area and 58 similar firms outside the project area as a control group) to determine the awareness of, usage of, and attitudes about OTA services. Eighty-seven percent of the firms that used program services were actively reducing toxics, as opposed to only 39 percent of firms that did not use program services.

In-depth personal interviews were also conducted at 28 companies to evaluate the firms' Toxics Use Reduction (TUR) performance and to collect additional data on OTA effectiveness. On average, those who received OTA assistance

"In addition to being a requirement of the P2 Act, it is important to evaluate the program to demonstrate its effectiveness to the legislature, to industry, and to the general public in order to continue the program. Another function of program evaluation is to help determine how the program should evolve over time to meet changing needs."

—Colorado Department of Public Health and Environment

reduced toxics by 65 percent. Twenty firms that received OTA assistance eliminated 1,250,000 pounds of chemical use through TUR modifications. OTA technical assistance recipients reduced an average of 45,000 pounds per chemical targeted. At seven firms, OTA documented a combined annual cost reduction of \$248,000, or an average annual cost savings of more than \$35,000 per company.⁶

Western New York Economic Development Corporation (WNYEDC) also used an integrated approach to program measurement.⁷ The purpose of WNYEDC's PPIS grant was to evaluate the effectiveness of a county-level technical assistance program, using the Erie County Office of Pollution Prevention (ECOPP) as a model. The grantee attempted to quantify pollution prevention and the associated economic benefits on a case-by-case basis in order to assess the impact of the program. This effort focused on companies to whom the program had provided onsite technical assistance. ECOPP established a routine call-back program for onsite assistance clients.

Approximately 6 months after a site visit is completed, ECOPP staff telephone a representative from the facility and complete a telephone survey designed for program evaluation. Companies that implemented ECOPP's technical assistance recommendations, achieved quantifiable economic benefits, and reduced or prevented waste were asked to be the subject of case studies.

In addition to these quantitative self-evaluation efforts, WNYEDC retained a private company to review and independently evaluate the efficacy of each element of the program, and to produce an evaluation report of the results. This outside contractor measured a range of elements, including:

- Perceived clarity of technical information provided by ECOPP;
- Quality of ECOPP's service;
- Implementation rate of the program's recommendations; and
- Perceived waste reductions as a result of the program's assistance.

This information was gathered both through telephone survey questions and a focus group meeting, which entailed a brainstorming session of 12 former and ongoing ECOPP clients from a cross section of industry groups.

Overall, 77 percent of the survey respondents had, at the time of the survey, implemented at least one of the recommendations made by ECOPP representatives. Sixty-eight percent of the respondents perceived a reduction in the amount of waste generated, while

43 percent perceived a reduction in operating cost. In addition to the recommendations implemented to date, 78 percent of the respondents indicated that they anticipate implementing ECOPP recommendations in the future.



B.2 Evaluation of Specific Services

Some PPIS grantees evaluate priority services such as technical assistance or outreach. These evaluations are more limited in scope than overall evaluations, and often focus on a single area of service delivery. To evaluate technical assistance services, some grantees conduct spot assessments and followup visits to client companies. These onsite visits can provide valuable information about the implementation rate for a technical assistance program's pollution prevention recommendations, as well as specific data on waste reductions and cost savings, useful for the development of case studies. Other benefits of this approach include the deepening of the relationship between the state and the facility, an opportunity to help the facility overcome difficulties implementing pollution prevention methods, and motivating the facility to implement additional measures.

Grantees also evaluate the quality of technical assistance and other services such as workshops or training sessions by surveying clients. This approach enables the grantee to assess whether or not

priority services are perceived as useful and sometimes document cost savings and waste reduction. Program managers can use the results of the assessment to make changes in services to better meet client needs. Neither of the above approaches are as resource-intensive as a comprehensive evaluation. On the other hand, these evaluations do not provide the same level of detail and documentation as a comprehensive evaluation, particularly for cost savings or pollution reductions. Examples of states that have conducted evaluations of specific program services include Rhode Island, Iowa, Missouri, Alaska, Colorado, and New Jersey.

The Rhode Island DEM used PPIS monies to conduct technical assistance assessments at 125 Rhode Island companies. Each company visited received a written report listing pollution prevention options available, including process and operational changes and recovery/reuse technology. Once a company's projects started, DEM continued to periodically visit the facility to check on operations and note improvements. Approximately 40 to 50 percent of the companies DEM assisted implemented source reduction measures.

Many companies achieved substantial cost savings as a result of DEM's technical assistance. For example, a jewelry manufacturer realized an annual savings of \$26,000 in feedstock, treatment, and disposal costs by implementing a recommendation to replace trichloroethylene with an aqueous cleaner. Similarly, a fastener manufacturer anticipates saving \$17,000

annually by changing its paint mixing process.⁸

The Iowa Waste Reduction Assistance Program (WRAP) also evaluated its technical assistance efforts quantitatively and produced a series of case studies containing the results. Program staff visited 16 client companies' facilities by prior agreement and interviewed responsible officials to obtain as much detail on successful pollution prevention projects as was feasible. A seventeenth client was a Governor's Waste Reduction Award winner, and WRAP used this client's award application to obtain information about its pollution prevention efforts. WRAP compiled the pollution prevention results of 14 companies into 32 case studies.⁹ Together, these companies showed a recurring cost savings of \$1.5 million per year and reduced over 10,000 tons of waste per year. A sample WRAP case study appears on page 34.

As seen in Chapter III, PPIS grantees commonly conduct outreach activities, such as workshops and presentations. Grantees indicated that evaluating these activities helps them gauge the effectiveness of their targeting efforts, as well as the level of customer satisfaction with the events. Several grantees, such as the University Extension at the University of Missouri-Columbia, distribute questionnaires or surveys to workshop attendees to evaluate the workshops' impact.

The program used its PPIS funds to conduct three 3-day courses based on a model developed by EPA. Twenty-eight representatives from manufacturing

organizations, government agencies, and the armed forces attended the workshops. At the end of each course, participants completed an evaluation form which asked attendees such questions as:

- "Which parts of the course will be most useful?"
- "What subject matter would you recommend be added to the course?"
- "Would you recommend this course to other professionals?"

University Extension then compiled all responses and produced an evaluation summary for each workshop. This process allowed the grantee to gauge the perceived usefulness of the training course and make improvements to course content.

Several PPIS grantees also use short survey forms to evaluate specific aspects of their programs. For example, the Alaska Department of Environmental Conservation developed a one-page questionnaire asking respondents to evaluate the usefulness of assistance and information that the program provides. The Colorado Department of Public Health and Environment (CDPHE) sent a multiple-choice survey to businesses that had used CDPHE's pollution prevention library. Similarly, the New Jersey Institute of Technology (NJIT) distributed a two-page survey asking recipients of technical assistance services to evaluate their experiences with the program. New Jersey's survey results showed that 83 percent of the program's clients ranked NJIT's service between very good and excellent, and over half of the respondents found that the pro-

Rhode Island DEM Technical Assistance Results

Total amount of waste reduced:
3,375,000 pounds liquid waste
20,800 pounds solid waste

gram's technical recommendations were very helpful.

These measures of effectiveness are valuable to the grantees in that they help program managers understand the perceived benefits of the services delivered.



B.3 Measures of Activity Level

The majority of state pollution prevention programs account for resources expended simply by tracking the level of activity of the program. This approach includes tracking the number and types of assessments completed, the size and types of audiences at presentations, or the number of phone calls for assistance received. Some programs also examine the number of newsletters written, facilitywide permits granted, grants dispersed, or case studies generated. For formal reporting, grantees also add narrative descriptions of accomplishments. Such an accounting of resources fills legislative reporting requirements.

Examining the quantities of services a program provides is a rela-

tively simple process that does not require the same level of energy or resources as an overall program evaluation or evaluation of specific services. The disadvantage of this approach is that it does not enable the program to assess environmental results nor the quality of services. Measures of PPIS grantees' activity levels from 1989 to 1993 can be found in Chapter III.



C. Improving Future Measurement Efforts

EPA's success in measuring the effectiveness of the grant program depends, in part, on the states' ability to measure their own progress. In turn, their ability to measure progress depends on the ability and/or willingness of participating facilities to measure pollution reductions. EPA began its effort to improve measurement and evaluation by writing this study, which documents current efforts. Grantees identified barriers to measurement

during the course of EPA's study. Barriers identified by the grant recipients include the following:

■ Limited time and resources.

During the early development of state pollution prevention programs, the states devoted little effort to evaluating the effectiveness of program elements. States focused their limited resources on program delivery, rather than on program evaluation. While some of the mature programs have now begun to evaluate their programs, developing programs may not have the resources to conduct full-scale evaluations.

Sample WRAP Case Study

Company: Douglas and Lomason Company

Product/Industry: Automotive hardware

Waste stream: Wastewater and sludge

Modifications: Source reduction/technology changes and procedural changes. Eliminated zinc phosphating processing and improved autophoretic deposition process. Improved wastewater treatment operation.

Benefits: Reduced wastewater treatment and sludge disposal costs, and eliminated the materials cost of an entire process. Saved over \$145,000 per year.

Opportunity: Douglas and Lomason manufactures automotive hardware for several national accounts. The company requested that WRAP perform an onsite assessment to assist it in implementing a waste reduction program. Previously many parts and sub-assemblies were coated in a zinc phosphating process that involved multiple stages and used immersion tanks. The process was costly, experienced some operational difficulties,

and generated considerable wastewater and sludge that required treatment and disposal.

Change: Douglas and Lomason eliminated the zinc phosphating process by changing the manufacturing process and adding protective measures. The wastewater and sludge from this process are no longer being generated, and the equipment and tanks are being removed. The company also finalized options to reduce the usage and sludge generation in an existing autophoretic deposition coating process.

Savings/Benefits: The elimination of zinc phosphating has drastically reduced the load on the in-plant wastewater treatment facility and thus reduced its operating costs. The reduction in treatment operating costs and sludge disposal costs is approximately \$20,000 per year. The material cost savings for eliminating the process totals over \$125,000 annually. Improvements to the autophoretic deposition process have reduced sludge generation by 85 percent.

■ **Linking reductions to elements of state pollution prevention programs.**

Isolating a grantee's efforts from overall influences that encourage waste-reducing behaviors is difficult. For example, much of the pollution prevention process originates in the private sector, making it difficult for state programs to measure overall results derived solely from their PPIS-funded initiatives.

■ **Obtaining data from facilities on pollution reductions.**

Some facilities that receive technical assistance from the state are reluctant to share information on results obtained. Such facilities view this information as confidential, proprietary information. Other facilities lack the time and resources to measure progress.

■ **Use of unsuitable data.** Certain methodologies used by the states may yield inconclusive results. Some PPIS grantees, for example, attempt to evaluate their programs using overall state quantitative data on emissions and wastes, such as the TRI. This type of measure, however, may not accurately consider the possibility of multiple causes for

changes in generation or release rates, such as:

- Fluctuations in production levels or economic activity;
- New treatment techniques that reduce the amounts reported while leaving generation rates unchanged;
- Increases in overall education efforts and awareness of pollution prevention;
- Changes that shift releases to different media; and
- Material substitutions that may result in new types of wastes or releases that are regulated differently or not at all.

■ **Lack of measurement methodologies and EPA guidance.**

Given that it is difficult to measure something that does not exist (i.e., pollution not made), states have had trouble developing measurement methodologies. A number of PPIS grantees cited lack of EPA guidance on measurement as an impediment to program evaluation. Specifically, grantees believe that EPA did not provide adequate direction for measuring progress outside the traditional "bean count"

methodology used by other media programs.

While EPA cannot address all of the barriers described above, it is making efforts to help grantees measure progress. In recent years EPA has provided evaluation assistance to an increasing number of programs. The Agency will continue to increase its measurement support to the states in the future.

For example, in FY96, EPA plans to narrow PPIS award criteria to fund states to develop measurement methodologies. Additionally, EPA plans on pilot-testing block grants to states that will enable the states to measure progress according to environmental performance, rather than activity measures alone. Over time, as the states gain more experience and knowledge about measurement and begin sharing this information, EPA will learn more about what works and what does not work. EPA will then facilitate the exchange of information on lessons learned between the states to improve subsequent measurement efforts.



¹ National Association for Public Administration, *A New Direction for EPA*, p. 168.

² National Association for Public Administration, *A New Direction for EPA*, p. 169.

³ National Association for Public Administration, *A New Direction for EPA*, p. 168.

⁴ Wigglesworth, D.T., ed. 1993. *Pollution prevention: A practical guide for state and local government*. Boca Raton, FL: Lewis Publishers.

⁵ Figures based on telephone interview with Alabama DEM staff.

⁶ Massachusetts Office of Technical Assistance for Toxic Use Reduction. 1994. *The Central Massachusetts Pollution Prevention Project summary report*.

⁷ Further details of measurement procedure and results may be found in the Erie County Pollution Prevention Program evaluation (April 1993).

⁸ More information about these examples and other Rhode Island case studies are available in *Pollution Prevention in Rhode Island: Case Studies of the Rhode Island On-Site Technical Assistance Program*, a document published by the Rhode Island Department of Environmental Management, Office of Environmental Coordination.

⁹ Further examples of pollution in Iowa may be found in *Pollution Prevention Works for Iowa: Case Studies*, an April 1993 document published by the Iowa Department of Natural Resources.



Chapter V

Case Studies

This chapter explores in detail how the PPIS grants influenced the establishment of comprehensive pollution prevention programs in five states. These in-depth case studies examine how the PPIS grants were integrated into state pollution prevention programs as a whole and highlight the effectiveness of the grants in building infrastructure and self-sustaining programs. As in previous chapters of this report, this chapter does not seek to describe a preferred state program model nor compare different approaches undertaken by the states. Rather, the purpose of the chapter is to showcase several state pollution prevention programs and describe the influence of PPIS funding in each state.

EPA designed the grant program to be flexible to meet different state needs. States defined the type of program organization that works best for them and the best method of building a sustainable program. Thus, the states highlighted (Delaware, New Hampshire, New Jersey, North Carolina, and South Dakota) differ in a number of ways. For example, some states implement their programs from a centralized office in the state regulatory agency (e.g., North Carolina, Delaware). Other states have used a decentralized approach to structure their programs. South Dakota, for instance, implements its grant activities through the media programs and partnerships with local agencies. Another difference between the states is the method used to secure future funding. While New Jersey and North Carolina fund their programs through fees on waste generation, New Hampshire is trying to secure future funding through general funds. Other states, such as South Dakota, are trying to integrate pollution prevention into the state regulatory agency so that future funding is not needed. While these different approaches to program implementation may raise questions as to which methods are the most effective, this report limits the discussion to recounting how states developed their pollution prevention programs and whether they achieved the initial PPIS program goals established by EPA.



A. Summary of Findings

This section summarizes the findings of the case study states, examining PPIS-funded activities in light of the grant program's goals. As described in Chapter I, EPA established the following goals at the outset of the program:

- Empowering states to build a pollution prevention infrastructure.
- Learning from and building upon innovative means of implementing pollution prevention at both state and facility levels.
- Supporting states in establishing and expanding pollution prevention programs.
- Providing resources for pollution prevention technical assistance and training.
- Fostering federal and state information sharing and communication.



A.1 Building a Pollution Prevention Infrastructure

PPIS provided seed money to the states to develop sustainable pollution prevention programs. States used a variety of tools to institutionalize pollution prevention, including developing pollution prevention legislation and strategies, establishing advisory committees, designing information systems, and securing future funding. For example, New Jersey and Delaware worked with state legislatures to develop pollution prevention legislation concurrent with their PPIS grant applications. Legislatures in both states enacted proposed legislation. The enactment of this legislation will help ensure that pollution prevention remains a formal state commitment. The New Jersey legislation also established a fee on hazardous waste generation, thus providing a source of funding for the program.

Infrastructure development activities:

- Strategies and legislation
- Advisory committees
- Information systems
- Secure non-federal funding

Three of the case study states, Delaware, New Hampshire, and South Dakota, established a task force or advisory committee to guide the state's pollution prevention program. These committees have brought together representatives from state media programs and other state agencies. The committees guide the development of the state pollution prevention program, foster communication between the media programs, and help institutionalize pollution prevention. In Delaware, the advisory committee includes other pollution prevention stakeholders, such as universities, utilities, local governments, and chambers of commerce. The meetings have created linkages between these different organizations interested in promoting pollution prevention, ensuring that pollution prevention activities continue long after PPIS funding ceases.

Although New Hampshire and South Dakota have not enacted legislation, these states have developed pollution prevention strategies to ensure the implementation of pollution prevention activities well into the future. These strategies also help states to incorporate pollution prevention into their regulatory programs. The strategies in both states make it clear that pollution prevention is the highest priority of the state environmental agency and direct regulatory managers to design their programs to foster pollution prevention.

Another method of institutionalizing pollution prevention is to develop the structure within the state to support pollution prevention. North Carolina used PPIS funding to develop an integrated management system to link all of the environmental databases in the state regulatory agency, including the Toxic Release Inventory (TRI), annual reports from hazardous waste generators, permit information, and monitoring data. The agency uses the system to compare data reported by industry and assess opportunities for waste reduction at specific facilities. The system also helps the pollution prevention program target activities, including technical assistance, training, grants, research, and demonstration projects, to high-priority industries in the state.

Since the outset of the program, PPIS has encouraged states to develop permanent sources of funding within the state. Given that state legislatures across the country have begun cutting back funding for all nonmandated programs, the case study states demonstrate that they are making inroads to securing permanent funding. To receive the PPIS grant, each state has secured matching funds of 100 percent (half of the total cost of the grant) to support program activities. In addition, New Jersey and North Carolina have both secured future funding from their state legislatures to continue program activities.

Delaware currently provides funding for two staff in the pollution prevention program. In the future, Delaware plans to leverage additional resources by working with the NIST-funded Manufacturing Extension Partnership center in the state.

New Hampshire currently has a bill pending in the state legislature to fund staff positions in the Department of Environmental Services. The state is also evaluating the following options:

- **Grant flexibility.** Use a portion of each media or program grant to create a pool of funds to support multimedia pollution prevention activities. Alaska and New York have successfully used this approach.
- **Small Business Technical Assistance Program (SBTAP).** At least partial funding for pollution prevention assistance efforts could be obtained through proposed funding mechanisms in the Clean Air Act, through the SBTAP.
- **Pollution Prevention Planning/Toxics Use Reduction (TUR) Law.** Passage of pollution prevention planning by businesses could provide for the set-up and operation of a technical assistance program without a self-sustaining, fee-based system.
- **Other methods.** The state is investigating other options for supporting pollution prevention, such as environmental block grants with a pollution prevention component, state general funds, existing funding sources currently used for cleanup and remediation, and permit fees.¹

South Dakota is not currently seeking future funding. Rather, the state plans to focus on integrating its pollution prevention program into the regulatory structure, so that a special pollution prevention program would no longer be needed. The state envisions that pollution prevention activities will be carried out through media programs, county governments, and other partners. Furthermore, the state hopes that its educational efforts will instill the value of pollution prevention in students and teachers to ensure its future.



A.2 Implementing Innovative Approaches to Pollution Prevention

The case studies demonstrate the innovative approaches that PPIS supports to offer incentives to target groups to reduce waste, including voluntary challenges to businesses, grants, and recognition. The states also used innovative approaches to reduce barriers to preventing pollution, including those prompted by regulatory requirements, limited technical information, and research gaps. Delaware established a voluntary challenge program (modeled on EPA's 33/50 program) to encourage industries to reduce the amount of toxic chemicals they emit. New Jersey instituted a Governor's Award Program to recognize the achievements of businesses that successfully reduce waste and other organizations and people that have furthered pollution prevention in the state. North Carolina offers challenge grants to industry to reduce waste.

To reduce cross-media transfer of pollutants, possibly prompted by regulatory requirements, New Jersey and Delaware conducted demonstration projects to test the feasibility of issuing industrial facilities a facilitywide permit. When issued, these permits will include all regulatory requirements of the air, water, and waste programs. The states are testing these permits to gauge their administrative feasibility and to assess their effectiveness.

North Carolina conducts pollution prevention research, in conjunction with the Pollution Prevention Research Center at North Carolina State University, to provide innovative solutions to persistent pollution problems at North Carolina businesses.



A.3 Establishing and Expanding Pollution Prevention Programs

Four of the five states whose case studies are featured—Delaware, New Hampshire, New Jersey, and South Dakota—had limited pollution prevention activities under way but no sustainable pollution prevention program in place prior to receiving PPIS funding.

Four of the five states whose case studies are featured—Delaware, New Hampshire, New Jersey, and South Dakota—had limited pollution prevention activities under way but no sustainable pollution prevention program in place prior to receiving PPIS funding. In all of these states, PPIS provided the seed money to establish pollution prevention programs.

North Carolina, one of the first states to establish a pollution prevention program, used PPIS funding to expand its activities. PPIS funding enabled the state to better target pollution prevention technical assistance by developing an information management system that integrated all of the state's environmental databases, and to expand technical assistance activities in conjunction with a media program. In sum, each case study demonstrates that PPIS funding supported the states in establishing or expanding their pollution prevention programs.



A.4 Providing Resources for Technical Assistance and Training

All of the states highlighted in the case studies have provided onsite technical assistance to targeted groups to help them prevent pollution in innovative ways. South Dakota is promoting better farmland and ranch management through the Bootstraps Project. This project aims to teach farmers and ranchers that sustaining a profitable operation is directly related to using practices that maintain or improve the environmental health of range and crop lands. Under Bootstraps, each family learns how to complete a natural resource inventory for their ranch or farm, develop a management plan, and select the best management practices (BMPs) to implement the plans. South Dakota provides technical assistance to help select and implement the BMPs to both protect the environment and promote economic stability. Delaware targeted the printing industry as a high-priority industry. The state has developed a fact sheet to help printers reduce waste and offers site assessments to all printers in the state. New Hampshire conducted nearly 40 site assessments to offer businesses innovative solutions to reducing waste.

The New Jersey Technical Assistance Program (NJTAP) conducted more than 75 onsite technical assistance audits with PPIS funding. Including all funding sources, NJTAP has assisted nearly 200 companies. While NJTAP responds to any business that requests services with either a phone call or an onsite visit, it also targets high-priority sectors in accordance with the state pollution prevention law. North Carolina identified appropriate small business categories and developed and distributed informational materials to the targeted industries. During this process, the Office of Pollution Prevention formulated training materials and identified future research needs for pollution prevention in small businesses.



A.5 Fostering Information Sharing and Communication

The case studies demonstrate that PPIS funding helped the case study states share information with each other and other states. For example, some of the case study states used their funding to transfer lessons learned from their demonstration programs to other states. South Dakota has made presentations to North Dakota to explain lessons learned from its innovative Bootstraps Project and plans to do the same in Colorado, Nebraska, Missouri, and Kansas. South Dakota has also received inquiries from foreign governments. New Jersey shared information on its facilitywide permitting project with Delaware as Delaware designed a similar project. In addition, as New Jersey formulated its technical assistance program, it consulted North Carolina for advice on how to design the program. Without PPIS funding, states would be operating in a vacuum. By sharing lessons learned with each other, the states avoid duplication of effort, as well as save money, time, and other resources.

States share information with EPA through a variety of vehicles, including semiannual progress reports, final grant reports, conferences, and publications. Together, the states featured in the case studies submitted more than 40 reports to EPA to document their

NJTAP conducted more than 75 onsite technical assistance audits with PPIS funds. Including all funding sources, NJTAP has assisted nearly 200 companies.

progress implementing pollution prevention activities. From these reports, EPA learns about grantee accomplishments, as well as what obstacles grantees encountered during implementation and how they overcame the obstacles. EPA can then compile data on grant activities and share this information with other states. States also share the publications created under the grant with EPA. For example, Delaware shares all new case studies on its information clearinghouse with EPA's Pollution Prevention Information Clearinghouse (PPIC).

PPIS has also enabled grantees to sponsor conferences to share information. Although not highlighted in the case studies, EPA has consistently supported the states to cosponsor semiannual conferences of state pollution prevention programs with the National Pollution Prevention Roundtable.



A.6 Conclusion

In sum, the case studies demonstrate that PPIS has achieved the initial objectives established at the outset of the grant program. States are making efforts to build sustainable programs by writing legislation, developing pollution prevention strategies, securing independent funding, and incorporating the pollution prevention ethic throughout state governments. The states are providing innovative solutions to persistent pollution problems and providing direct technical assistance to small and medium-sized businesses, as stipulated by Congress. Furthermore, since the inception of the program states are sharing information and trying to leverage resources with other environmental organizations.

Prior to the inception of the PPIS program, very few organizations provided environmental assistance. Only a handful of states offered any kind of technical assistance. PPIS funding has dramatically increased the number of states offering outreach, training, and technical assistance. Today, several other organizations have begun providing environmental assistance, many of them with a pollution prevention focus, including:

- **Small Business Administration (SBA)** funds Small Business Assistance Centers throughout the country that provide technical assistance to small businesses.
- **National Institute of Science and Technology (NIST)** funds the Manufacturing Extension Partnerships (MEP), also located in a number of states.
- **Small Business Development Centers** provide technical assistance to small businesses to meet the requirements of the Clean Air Act Amendments emphasizing pollution prevention.
- **EPA's Office of Enforcement and Compliance Assistance (OECA)** is funding four compliance assistance centers.

Given this growing awareness of groups providing environmental services, the FY95 PPIS grant recipients are required to leverage the capabilities of other organizations in their states. Such coordination will ensure that there is no duplication of effort and will help to spread pollution prevention information.



B. Case Studies

Each case study begins with an overview of the state's pollution prevention program, including the organization structure,² program funding and budget, and any pollution prevention legislation or strategy in place. The case studies then describe the different activities supported by the grants as well as state accomplishments related to these activities. Finally, the case studies assess the impact of the PPIS grants on the state program and describe future challenges for each state. As described above, EPA selected the following states in five EPA regions for the case studies:³

- Delaware (Region 3)
- New Hampshire (Region 1)
- New Jersey (Region 2)
- North Carolina (Region 4)
- South Dakota (Region 8)



B.1 Delaware

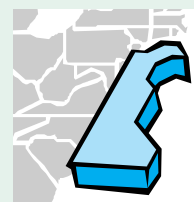
Overview

Delaware established its pollution prevention program in June 1990 with the passage of the Waste Minimization/Pollution Prevention Act. The mission of the Delaware Pollution Prevention Program (DPPP), as specified in the act, is to demonstrate and facilitate the potential for pollution prevention in Delaware by:

- Providing technical assistance to targeted industries
- Providing education and outreach in waste minimization and pollution prevention
- Developing a statewide recycling program

Organizational Structure. The DPPP, located in the Department of Natural Resources and Environmental Control (DNREC), focuses on education, technical assistance, and financial incentives to help businesses and residents take actions that will not only improve environmental quality but also save money. The initial technical assistance arm of DPPP was the Delaware Waste Reduction Assistance Program (DELWRAP) at the University of Delaware. The technical assistance program has since moved to the DPPP. DPPP also has joint activities with the Delaware State Chamber of Commerce, the Delaware Economic Development Office, and the Departments of Transportation and Administrative Services. Each of these organizations helps to implement the pollution prevention strategy. Exhibit V-1 summarizes the pollution prevention infrastructure in Delaware.

Program Funding and Budget. PPIS funds, including the state match, provide over 80 percent of DPPP's funding, including funding for two staff positions. Coastal management and nonpoint source grants fund the remainder of the program. Exhibit V-2 summarizes FY95 funding sources.



During the period of this study, Delaware received two PPIS grants. The first grant, *Development of a Pollution Prevention Program for the State of Delaware*, was awarded in June 1990. The grant established a multimedia, nonregulatory pollution prevention program to demonstrate and facilitate the potential for pollution prevention and waste reduction in Delaware. EPA awarded the second grant, *Enhanced Pollution Prevention Program*, in January 1993. The purpose of this grant was to integrate pollution prevention into the media-specific regulatory programs and to prepare a pilot multimedia permit for one facility. Exhibit V-3 summarizes Delaware's grants.

Strategy and Legislation. As described above, Delaware enacted the Waste Minimization/Pollution Prevention Act in 1990. In addition to establishing DPPP, the

Exhibit V-1 DELAWARE POLLUTION PREVENTION NETWORK

Organization	Key Activities	
Delaware Chamber of Commerce	<ul style="list-style-type: none"> ● Industry roundtable co-sponsor ● Outreach 	
Delaware Economic Development Office	<ul style="list-style-type: none"> ● On-line information ● Clearinghouse ● Financial assistance 	
Delaware Solid Waste Authority	<ul style="list-style-type: none"> ● Recycling centers 	
Department of Administrative Services	<ul style="list-style-type: none"> ● State office paper recycling program ● Green procurement policy 	
Department of Natural Resources and Environmental Control	<ul style="list-style-type: none"> ● Implementation committee ● Strategy/Legislation ● Industry roundtable ● Technical assistance ● Outreach and education ● Voluntary reduction program 	<ul style="list-style-type: none"> ● Training ● Regulatory integration ● Multimedia permitting project ● Waste exchange ● Program evaluation
Department of Transportation	<ul style="list-style-type: none"> ● Tree recycling ● Reuse of fly ash 	
NIST Manufacturing Extension Partnership	<ul style="list-style-type: none"> ● Technical assistance ● Training courses ● Demonstrations 	
University of Delaware	<ul style="list-style-type: none"> ● Research ● Seminars 	<ul style="list-style-type: none"> ● Teleconferences

Exhibit V-2

FY 1995 Pollution Prevention Program Funding Sources

Coastal management/nonpoint source	\$39,420
PPIS—EPA portion	\$89,790
PPIS—State match	\$89,790
<hr/>	
Total Funding	\$219,000

act also declared an environmental policy for the State of Delaware in accordance with EPA's waste management hierarchy:

Waste that is generated should be, in order of priority, reduced at its source, recovered, reused, recycled, treated, or disposed of so as to minimize the present and future threat to human health and the environment.⁴

The act also required DNREC to establish an implementation committee to guide program development and ensure implementation of the waste management hierarchy. The act stipulates that the implementation committee must consist of representatives of a wide range of groups, including state and local governments, nonprofit organizations, utilities, and academia.

Exhibit V-3

PPIS Grant Summary

Grant	Year	Amount
Development of a Pollution Prevention Program for the State of Delaware	1990	\$293,000
Enhanced Pollution Prevention Program	1993	\$199,000
<hr/>		
Total Funding		\$492,000

Activities Funded by PPIS Grants

PPIS supports a wide range of activities at DPPP in the areas of infrastructure development, technical assistance, education and outreach, and regulatory integration:

- **Infrastructure development.** PPIS-supported activities to build Delaware's infrastructure include an implementation committee, an industry roundtable, and a voluntary program that challenges businesses to reduce hazardous emissions.
- **Technical assistance.** Activities supported by PPIS funding include onsite audits, an information clearinghouse, and an internship program.
- **Outreach and education.** DNREC conducts a wide range of activities to promote pollution prevention concepts to businesses, citizens, local governments, and farmers.

Activities include developing outreach materials, giving presentations and workshops, and developing curriculum materials.

- **Regulatory integration.** PPIS supports the integration of pollution prevention into Delaware's regulatory program by training media program staff in pollution prevention techniques, a pilot project to assess facilitywide permitting, and regulatory review.

These activities are described further, below.

Implementation Committee. PPIS funding allowed Delaware to establish the Pollution Prevention Implementation Committee, which oversees the activities of DPPP and guides the program's future direction. The Implementation Committee consists of members from a wide range of backgrounds, including other state agencies, industry, civic and environmental organizations, and faculty from the University of Delaware College of Engineering. The committee selected the first two target industries and identified locations for technical assistance utilizing SARA Title III Section 313 data. The committee has met on a monthly basis from 1990 through 1992 and quarterly from 1992 through 1994.

Industry Roundtable. DNREC and the Delaware Chamber of Commerce established the Pollution Prevention Industry Roundtable in August 1991 to create a forum in which companies could learn from each other and share experiences and information on pollution prevention and recycling. Meetings have included tours of facilities (including Zeneca Pharmaceuticals and DuPont Edge Moor Plant) and presentations on waste reduction programs. Membership has expanded from eight participants at the first meeting to an average attendance of 30 industrial facility representatives per meeting. Currently, the roundtable has 115 members that represent 62 Delaware companies. The roundtable meets on a quarterly basis.

Voluntary Reduction Program. Modeled after EPA's 33/50 program, DNREC has established a voluntary program to encourage manufacturers to reduce the amount of toxic chemicals they release into the environment. The goal of the program is to reduce toxic emissions as reported under the TRI by 50 percent statewide by the end of 1995. Twenty Delaware companies have agreed to participate in the program. Thus far, facilities participating in the program have reduced emissions by 12 percent.

Onsite Assistance Audits. DELWRAP, and now the DPPP, provides pollution prevention technical assistance to small and medium-sized companies on a voluntary, nonregulatory, and confidential basis. According to the DPPP, technical assistance focuses on smaller companies because they generally do not have the economic or technical resources necessary to evaluate pollution prevention opportunities.

DELWRAP initially targeted the printing industry and later expanded to include all manufacturing options. To publicize the program and encourage participation by Delaware companies, DELWRAP conducted a number of outreach activities. These

Implementation Committee Members

- Department of Administrative Services
- Department of Agriculture
- Delaware Development Office
- Department of Public Instruction
- Department of Transportation
- Delaware Solid Waste Authority
- University of Delaware
- Delaware State College
- Delaware Technical and Community College
- State Chamber of Commerce
- Central Delaware Chamber of Commerce
- Maryland/Delaware Solid Waste Association
- League of Women Voters
- Delaware League of Local Governments
- Chemical Industry Council
- D&J Recycling
- Delmarva Power & Light

activities included radio interviews, articles in local newspapers and business newsletters, and a mailing to all 77 printers in the state. The mailing included a letter, a brochure describing DELWRAP, and an application for technical assistance. Other methods of marketing the program included publicity through the Delaware State Chamber of Commerce, trade shows, and referrals from DNREC's regulatory program, where appropriate.

DELWRAP completed 17 onsite technical assistance visits and responded to 30 technical inquiries. Each facility received a report outlining waste reduction recommendations and an offer of followup and assistance on implementation. An oversight committee (consisting of officials from the University of Delaware, DNREC, and the Delaware State Chamber of Commerce) evaluated the program by reviewing the pollution prevention assessment reports that were given to clients and comparing them with reports written by other states. The committee concluded that the level of activity was comparable and that the reports were well written.

Information Clearinghouse. DNREC and the Delaware Development Office established a waste minimization/pollution prevention information clearinghouse as part of the Delaware On-Line Database housed at the Delaware Development Office. The clearinghouse includes bibliographies and case studies sorted by standard industrial classification (SIC) codes. DNREC updates the clearinghouse as new documents are added to its pollution prevention library and as new Delaware case studies are received. DNREC shares new case studies with EPA's Pollution Prevention Information Clearinghouse.

Internship Program. In coordination with the University of Delaware, DNREC is in the process of establishing an internship program for engineering students. Through this program, interns will join DPPP staff on technical assistance visits. At these visits, the interns will provide their expertise and learn about pollution prevention in the process.

Outreach Materials. Delaware used PPIS funds to create many outreach documents, including fact sheets, manuals, and home audit kits. Pollution prevention fact sheets for the following industry sectors were developed:

- Auto repair
- Printing
- Dry cleaning
- Chemical manufacturing (targeted to small manufacturers)
- Construction and demolition
- Metal finishing
- General business

The program developed a *Waste Reduction Self-Evaluation Manual* to help businesses conduct self-assessments of pollution prevention opportunities. To date, 82 businesses have ordered copies of the manual. In addition, DPPP has supplied copies of the manual to DNREC regulatory programs. The program also sent promotional material to targeted groups. For example, DNREC distributed 175,000 home audit kits to Delaware

Avoiding Duplication

DELWRAP tentatively identified the plastics industry as a second target industry for technical assistance. DELWRAP surveyed 67 Delaware companies in the plastics industry to gather data to develop the program. Of the 22 responses received, most companies were already receiving assistance from the Composite Center at the University of Delaware. To avoid duplication of effort, DELWRAP decided not to target the plastics industry, but rather provide assistance to any type of business that requests its services.

homes through Sunday newspapers. Additionally, the Delaware Chamber of Commerce publication, *News*, included a magazine insert that featured articles on DNREC pollution prevention activities and services for businesses, articles on DELWRAP, and articles by companies on pollution prevention activities at their facilities. *News* has a statewide circulation of 14,000.

Workshops and Presentations. Delaware conducted several hundred presentations, seminars, and workshops with the help of PPIS funds. These activities targeted specific companies, schools, and community and government groups. Examples of topics include:

- Pollution prevention training for Delaware industries
- Promoting landfill alternatives
- Facility planning

Twenty-three attendees representing 17 companies attended the facility planning workshop. After the workshop, DELWRAP contacted participants with a letter and a phone call to answer any pollution prevention questions and encourage them to take advantage of DELWRAP technical assistance services. As a result of the workshop and followup activities, 10 companies requested onsite technical assistance audits. Six additional companies expressed a strong interest in DELWRAP services and requested future contact.

Education. To provide early education on protecting the environment and to help instill a waste reduction ethic in Delaware's youth, DNREC developed a pollution prevention curriculum for grades K-8. The curriculum ties reducing, reusing, and recycling into the basic curriculum subjects, such as history, science, and math. More than 300 teachers have been trained in using the curriculum since 1991. These teachers have the potential to reach more than 7,500 students each year.

DNREC staff also use curriculum materials during outreach events, such as special children's programs at schools, fairs, and festivals. To supplement the curriculum, the program routinely publishes an environmental education newsletter for children.

To address the special needs of day-care centers and preschools, DNREC purchased a special waste reduction curriculum for children ages 3 to 5. The curriculum is available at all teacher learning and resource centers in the state.

Reference Materials. DNREC has established a pollution prevention reference collection in each of Delaware's libraries and bookmobiles. Books included in the collection address water and energy conservation, household hazardous substances, environmental consumerism, and nonpoint source water pollution.

Training. PPIS funded DPPP to train DNREC staff in the fundamentals of pollution prevention to enable staff to incorporate pollution prevention into their daily activities. Approximately 50 regulatory staff, including scientists, engineers, and senior managers, attended the 1-day pollution prevention training course, and more than 30 staff from the regulatory programs, including air, water, and hazardous waste programs, have attended a 3-day course on pollution prevention assessments. DNREC also provides cross-training to media program staff concerning the other regulatory programs.

Facilitywide Permitting. A major initiative funded by the second PPIS grant is a pilot project to evaluate the issuance of multimedia permits in Delaware. A multimedia permit

is a facilitywide permit that incorporates the requirements of the air, hazardous waste, solid waste, and water pollution control programs. By issuing the permit on a multimedia basis, DPPP hopes to promote pollution prevention and avoid cross-media transfer of pollutants in the regulatory process.

To implement the demonstration project, DNREC formed a multimedia focus group consisting of staff from the air, NPDES, RCRA, solid waste, and pollution prevention programs. The focus group contacted several states with experience in multimedia permitting to learn about their experiences. The focus group then invited a DuPont facility to participate in the project. Following meetings with DuPont, the focus group decided first to develop a mock permit for a fictitious company to work out the details of issuing a multimedia permit. DuPont assisted in developing the mock permit. DNREC has received the pilot project facility's permit application and is currently working on pollution prevention opportunities with the facility prior to permit review.

Regulatory Review. At the request of the NPDES program, DPPP staff reviewed proposed NPDES regulations for opportunities to incorporate pollution prevention. The revised regulations (currently in draft form) embrace the concept of pollution prevention as the preferred waste management method and provide incentives for facilities to reduce their discharges through pollution prevention. These draft regulations serve as a model for many other states as they review their NPDES regulations.

Analysis of PPIS Impact

Prior to PPIS funding, Delaware had no formal pollution prevention program. PPIS funding has enabled the state to provide technical assistance and outreach, but perhaps more importantly, Delaware has developed the infrastructure necessary to sustain DPPP over time.

Infrastructure. The passage of legislation concurrent with the PPIS grant application was the first step toward institutionalizing pollution prevention in Delaware. PPIS funding created a network of people interested in instilling the pollution prevention ethic in businesses throughout the state. The implementation committee brought together a diverse group of individuals to steer state pollution prevention policy. Implementation committee meetings enabled participants to brainstorm ideas, share information, and link services. The industry roundtable and Voluntary Reduction Program cemented the program links with Delaware businesses. The Implementation Committee is actively seeking funding for the program once PPIS funds are terminated. The legislature is also considering legislation that would establish a state matching grants program to assist businesses with pollution prevention projects.

Regulatory Integration. Delaware's activities currently focus on the transition to multimedia integration. A prime example is the multimedia permit pilot program, which seeks to determine the feasibility of reorganizing the regulatory structure of DNREC. DPPP has also formed a multimedia focus group within the agency to work on the barriers to multimedia regulation. The program has worked with all of the media programs and has trained its entire staff in cross-media transfer issues. Finally, the technical assistance program looks at all media when working with a facility to reduce waste generation.

The small size of the programs and the centralized location of the staff makes coordination and communication easier.

In addition to the multimedia activities of DPPP, the program is expending a significant effort to integrate pollution prevention into the regulatory programs of DNREC. DPPP staff will join compliance inspectors from the hazardous waste, air, and water programs to help identify pollution prevention opportunities and to inform facilities about the services of DPPP. DPPP has also helped draft NPDES permit regulations that include pollution prevention incentives.

As in most states, there was limited coordination between regulatory programs in Delaware before the formation of the DPPP. At present, many lines of communication have opened between the media programs, resulting in increased efforts to implement a pollution prevention strategy and projects by all the major media programs (air, NPDES, RCRA, and industrial solid waste). Enhanced communication between the media programs is a major step toward integrating pollution prevention into the regulatory process.

Program Evaluation. Currently, DPPP is struggling with the question of how to evaluate the success of a pollution prevention program. In its enabling legislation, DPPP is required to report activities conducted to the state legislature in an annual report. This report is a narrative description of activities undertaken and accomplishments achieved. The document does not attempt to measure actual pollution reductions. According to the grantee, one difficulty is measuring any direct, quantitative results of its activities when companies generally do not share the results of pollution prevention projects. Another challenge is accurately attributing pollution prevention results to DPPP efforts, considering that pollution prevention information is available from multiple sources.

Nonetheless, DPPP has evaluated several components of its program. For example, it conducted a survey of the Pollution Prevention Industry Roundtable and considers attendance at presentations and workshops an indication of its success at publicizing its work. The study's findings include the following:

- Eighty-seven percent of respondents stated that the programs and services of the DPPP have been beneficial to their companies.
- Eighty-nine percent of the respondents rated the industry roundtable meeting formats as "good" or "excellent."
- Seventy-eight percent of respondents rated the information exchange between companies as "medium" to "high."

Additional publication of roundtable meetings was suggested by several respondents as a way to increase membership.

The technical assistance program evaluates the quality of its services by compiling followup questionnaires to the facilities.⁵ DELWRAP also followed up with workshop participants to see if they would like additional assistance in implementing pollution prevention activities. As described above, 10 out of 17 companies requested that DELWRAP conduct an onsite visit after attending one of the workshops. Six of the remaining seven companies expressed an interest in receiving additional information.

Program Future

To enable DPPP to focus on source reduction, the top of the waste management hierarchy, DNREC separated pollution prevention and recycling programs. DPPP was moved to the Office of the Secretary to enable better coordination with programs throughout DNREC. The two programs will continue to coordinate assistance efforts.

Delaware currently provides funding for two DPPP staff. No additional funding for DELWRAP was obtained; the technical assistance function has been moved to the DPPP and the NIST-funded Delaware Manufacturing Alliance. The reception to assistance from the DPPP has been quite positive.

DPPP believes its challenge for the future is to continue the program's existing integration efforts and to expand its assistance to greater numbers of small businesses in the state.

Contact

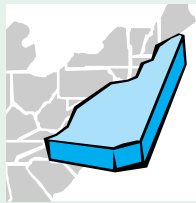
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B.2 New Hampshire

Overview

Organizational Structure. New Hampshire divides responsibilities for implementing pollution prevention activities among several organizational units. Within the Department of Environmental Services (DES) Waste Management Division is the New Hampshire Pollution Prevention Program (NHPPP), a nonregulatory program that conducts pollution prevention workshops and provides onsite technical assistance assessments for businesses upon request. In addition, NHPPP staff provide technical assistance over the phone and maintain a library of information on new technologies, pollution prevention products and vendors, fact sheets, and case studies, which are available to businesses and industries. The department also has a full-time pollution prevention coordinator in the Office of the Commissioner. The coordinator is responsible for pollution prevention policy development and regulatory integration initiatives. Although not funded by the PPIS program, DES also maintains a Small Business Technical Assistance

Exhibit V-4

NEW HAMPSHIRE POLLUTION PREVENTION NETWORK

Organization	Key Activities	
Department of Environmental Services — Office of the Commissioner	<ul style="list-style-type: none"> • Task force • Regulatory integration • Strategy 	
Department of Environmental Services — Pollution Prevention Program	<ul style="list-style-type: none"> • Technical assistance (on and off site) • Information clearinghouse • Outreach materials • Presentations and workshops 	<ul style="list-style-type: none"> • Conferences • Educational partnerships • Recognition program
Department of Environmental Services — Small Business Technical and Environmental Compliance Assistance Program	<ul style="list-style-type: none"> • Technical assistance • Outreach materials • Presentations 	<ul style="list-style-type: none"> • Small business ombudsman • Regulatory assistance
University of New Hampshire — Pollution Prevention Partnership	<ul style="list-style-type: none"> • Pollution prevention curriculum • Internship program • Advisory committee 	
Business and Industry Association of New Hampshire — WasteCap	<ul style="list-style-type: none"> • Materials exchange • Newsletter • Technical assistance 	<ul style="list-style-type: none"> • Presentations and workshops • Onsite assessments

Program (SBTAP) in the Air Resources Division. SBTAP was established and funded under the Clean Air Act to help small businesses meet and go beyond current and proposed regulations.

A Pollution Prevention Partnership with the University of New Hampshire complements DES activities. The university is currently developing a pollution prevention curriculum and coordinates a student internship program. Exhibit V-4 further describes the roles of each organization.

Program Funding and Budget. NHPPP currently has a staff of 1.8 full-time employees and is still working under the original 3-year PPIS grant of \$296,000. This funding for the NHPPP is 100 percent federal funding and was awarded in September 1991. The first grant was designed to formalize nonregulatory pollution prevention initiatives in the DES with a pollution prevention program (NHPPP). EPA awarded a second grant, *A Pollution Prevention Partnership*, in October 1993. The purpose of this grant was to incorporate pollution prevention into the higher education system and to provide an additional university-based, nonregulatory source for technical assistance in New Hampshire via an internship program. Exhibit V-5 summarizes grant awards during the period of this study.

Exhibit V-5		
PPIS Grant Summary		
Grant	Year	Amount
New Hampshire Pollution Prevention Program	1991	\$296,000
A Pollution Prevention Partnership	1993	\$ 84,000
Total Funding		\$380,000

Strategy and Legislation. Currently, there is a bill pending in the state legislature to formally establish the pollution prevention program, mandate the offering of technical assistance services, and fund two positions. Prior to enacting any legislation, the state incorporated pollution prevention goals into DES's Strategic Plan and developed a pollution prevention strategy. The plan, released in early 1994, articulates the department's mission statement, goals, objectives, and implementation schedule. The plan is intended to shape DES's activities over the coming years. Of the seven goals established by the plan, the first goal is "to prevent, minimize, and clean up environmental degradation in order to protect public health, safety, and the natural environment." To implement this goal, DES identified several objectives, including to "continually guide, educate, and provide technical assistance to those affected by the department's permitting and other requirements, with an emphasis on pollution prevention."⁶

In addition to the Strategic Plan, DES released a pollution prevention strategy in January 1995. The Pollution Prevention Strategy describes the department's pollution prevention goals, outlines existing pollution prevention activities, and discusses and recommends actions on specific issues in the areas of infrastructure, targeting activities, out-

Goal Statement

“It is the goal of the department to promote pollution prevention actions consistent with the definition as the preferred option for meeting established environmental quality goals. We recognize, however, that in some cases pollution prevention may not be feasible at this time. In those cases, the Department will strive to ensure that pollution prevention options are considered first, followed by recycling, treatment, and disposal. Decisions that do support efforts to prevent pollution at the source of generation or release should be re-examined periodically in an effort to continually strive toward our pollution prevention objectives.”⁷

reach, and regulatory integration. Specific activities, including timetables for completion, identified by the strategy include:

- Develop appropriate pollution prevention outreach materials for internal distribution.
- Provide pollution prevention orientation training for all DES employees (more than 80 percent complete).
- Provide advanced pollution prevention training for appropriate field and technical staff such as inspectors, permit writers, and engineers.
- Provide multimedia training for selected regulatory and technical assistance staff.
- Reward employees who provide significant contributions to pollution prevention efforts within DES.

The strategy also discusses the need for identifying long-term funding of pollution prevention activities. It recommends that DES examine several options for securing long-term funding:

- **Grant flexibility.** Use a portion of each media or program grant to create a pool of funds to support multimedia pollution prevention activities. Alaska and New York have successfully used this approach.
- **Small Business Technical Assistance Program (SBTAP).** At least partial funding for pollution prevention assistance efforts could be obtained through proposed funding mechanisms in the Clean Air Act, through the SBTAP.
- **Pollution Prevention Planning/Toxics Use Reduction (TUR) Law.** Passage of a pollution prevention planning by businesses could provide for the set-up and operation of a technical assistance program without a self-sustaining, fee-based system.
- **Other methods.** The state is investigating other options for supporting pollution prevention, such as environmental block grants with a pollution prevention component, state general funds, existing funding sources currently used for cleanup and remediation, and permit fees.⁸

Activities Funded by PPIS Grants

PPIS funds have allowed New Hampshire to develop a pollution prevention infrastructure, provide technical assistance to businesses, integrate pollution prevention into the regulatory programs, and educate New Hampshire businesses, residents, and students about pollution prevention. These activities are described further below.

- **Infrastructure.** PPIS-funded activities to develop infrastructure include an agency-wide task force, the pollution prevention strategy document, and strategic plan.
- **Regulatory integration.** Activities to incorporate pollution prevention into the regulatory programs include identification of regulatory barriers to pollution prevention, staff training, increasing coordination between the NHPPP and the regulatory offices, and incorporating pollution prevention into some permits and enforcement settlements through Supplemental Environmental Projects (SEPs).

- **Technical assistance.** PPIS funding enables DES to provide a range of technical assistance services to businesses, including onsite assessments and an information clearinghouse.
- **Outreach and education.** New Hampshire sponsors a wide range of education and outreach activities including conferences, a pollution prevention curriculum, a student internship program, and an advisory committee. The NHPPP has also worked with the New Hampshire Department of Education to develop and provide teacher training at the grade school level.

Task Force. In May 1992, PPIS funds enabled DES to establish a multimedia pollution prevention task force to guide and integrate pollution prevention into all department activities. Task force representatives consisted of staff from each of the DES media programs (air, water, and waste) and included a cross section of staff levels, including staff from technical, enforcement, policy, and administrative positions. The task force identified the following objectives:

- Facilitate information exchange among and between task force members and related organizations.
- Pursue, where appropriate, integration of pollution prevention measures directly into the regulatory process for air quality, water quality (including surface water, ground water, and wetlands), and waste management permits, inspections, and enforcement.
- Establish a target list of pollution types and sensitive resources to be addressed through pollution prevention efforts, based on priorities established by air, water, and waste programs.
- Make recommendations in the area of pollution prevention technical assistance to be offered by the Department.
- Develop a pollution prevention strategy that recommends procedures and policies for implementing pollution prevention projects and initiatives.

The task force has achieved many of these goals. The task force has increased the dialogue between the different media programs and fostered the integration of pollution prevention throughout DES, as described further below. Additionally, the task force completed the Pollution Prevention Strategy, as described above, to further institutionalize pollution prevention in the state.

Barriers Study. The task force analyzed barriers to integrating pollution prevention throughout the department's regulatory programs. To identify barriers, the task force researched barriers identified by the media program staff. DES also solicited information on barriers from the regulated community. In a workshop sponsored by DES, 30 company representatives identified specific barriers to implementing pollution prevention at their facilities and ways the department could facilitate implementation of pollution prevention projects. The report, *Barriers to Pollution Prevention Within a Regulatory Agency*,¹⁰ identifies several types of barriers, including:

- Specific prohibitions of pollution prevention activities
- Lack of flexibility in interpreting rules/policies

Task Force Purpose

"To direct, coordinate, and promote strategies that prevent pollution of air, land, and water. Such strategies include, but are not limited to: toxic use reduction, waste minimization, and best management practices to conserve natural resources and protect human health and the environment."⁹

- Informational barriers
- Procedural and processing barriers
- Lack of positive incentives

In the future, the department will continue to identify additional barriers and means of resolving the barriers to pollution prevention in the regulatory program. The department also plans to improve its procedures for making and tracking consistent and efficient regulatory determinations. By doing so, the department will address some of the procedural barriers identified by the facilities.

Staff Training. One important barrier identified in the report is “resistance to change.” To overcome this barrier, the task force recommended staff training and education. To this end, more than 85 percent of the department personnel of 420 has participated in a 3-hour introductory pollution prevention training seminar.

Incorporating Pollution Prevention into Compliance and Enforcement. As a result of the task force and strategy, DES has increased communication between the compliance and enforcement programs and NHPPP. For example, during air, water, and waste inspections, regulatory staff routinely refer facilities to NHPPP for assistance. During the inspection itself, inspectors may pose questions on pollution prevention activities at the facilities, refer the facility to NHPPP for technical assistance, or distribute pollution prevention literature. Furthermore, inspectors also refer facilities to NHPPP when they discover deficiencies at the facility. The standard language for “Letters of Deficiency” emphasizes that the goal of the department is to promote pollution prevention at the source as the preferred means of achieving environmental goals. The standard language of the letter also refers the facility to the DES pollution prevention coordinator.

The Hazardous Waste Compliance Section has instituted a “partial inspection” program to reach a greater number of New Hampshire small-quantity hazardous waste generators.¹¹ Using an abbreviated checklist, inspectors focus on waste generating processes and storage in the partial inspection. A strong component of these inspections is the pollution prevention referral.

Another way that DES is incorporating pollution prevention into compliance and enforcement is negotiating Supplemental Environmental Projects (SEPs) that encourage pollution prevention as part of enforcement settlements. SEPs allow a facility that violates environmental rules to conduct a project that benefits the environment in lieu of a portion of the fine. Examples of SEPs with a pollution prevention focus at DES include offering free seminars to other facilities on waste prevention and management and the development of outreach materials (such as brochures or videos) on proper waste management techniques. An additional project required the facility to install an Ammoniacal Etchant recovery system that will allow the facility to regenerate etchant on site.¹²

Regulatory Review. As described above, DES plans to do a thorough review of its procedures to make regulatory determinations to make the procedures more efficient and welcome to pollution prevention. As part of this process, DES has identified several instances where it can encourage pollution prevention through the regulatory process. Examples of regulatory changes that encourage pollution prevention include:

- **Reuse of cloth wipers via industrial laundering.** New Hampshire developed specific requirements for laundering contaminated cloth wipers. By managing the cloth in

an environmentally sound manner, as described in the requirements, facilities may avoid full regulation under the New Hampshire Hazardous Waste Rules and RSA. Ch 147-A.¹³

- **Use of performance standards over prescriptive regulations.** The air program seeks to encourage pollution prevention by writing regulations that are performance based. For example, DES changed regulations to allow facilities to meet emission limitations through performance standards. The standards encourage facilities with coating operations (e.g., can, paper, film, metal parts manufacturers) to obtain and use coatings that are inherently low in volatile organic compounds that do not require the use of stack emission control devices.¹⁴ This approach allows facilities to use innovative technologies and pollution prevention to comply with air regulations.

Incorporating Pollution Prevention in Permitting. DES is incorporating pollution prevention into the permitting process in several areas. For example, DES uses a permit process questionnaire to obtain feedback from the regulated community on the permit process. DES plans to use this tool to facilitate pollution prevention in the permitting process. In addition, DES and the City of Lebanon are developing a model pretreatment program and Sewer Use Ordinance. Through this project, the POTW will work with local businesses to reduce the amount of pollution discharged to the POTW.

Onsite Assessments. NHPPP provides onsite, nonregulatory technical assistance directly to businesses upon request. For each client, NHPPP examines processes that the business uses that generate waste and recommends actions to prevent waste and pollution. The program uses the expertise of retired engineers to deliver this assistance. Thus far, the program has conducted more than 40 onsite assessments.

In a review of technical assistance service delivery, the task force recently found that New Hampshire companies are not taking full advantage of available technical assistance services. Even though DES promises that onsite assessments are confidential, the task force believes that some businesses do not request onsite assessments for fear that DES staff might find violations of environmental regulations and initiate enforcement procedures.

Because businesses seem to be hesitant to use technical assistance services on a voluntary basis, the Pollution Prevention strategy recommends that the technical assistance program “emphasize targeted pollution prevention assistance through workshops, fact sheets, technical bulletins, etc.” While the strategy does not refuse service to any business that requests assistance, it does recommend that the program “direct onsite activities toward those companies that have either regulatory difficulties or special needs, as well as toward municipalities and other state agencies.”

Information Clearinghouse. NHPPP maintains a technical assistance hotline to answer phone inquiries about pollution prevention options. The program also maintains a library and electronic database of approximately 1,500 documents, vendors, and case studies. The NHPPP maintains close contact with other state technical assistance programs through the National Pollution Prevention Roundtable to share clearinghouse materials.

Conferences. PPIS funding allowed New Hampshire to strengthen ties between NHPPP and the University of New Hampshire (UNH). To facilitate networking and information exchange between government, universities, and the business community, several jointly sponsored pollution prevention conferences have been held statewide.

Workshops and Presentations. NHPPP has conducted workshops, seminars, and annual conferences for diverse groups of people. At the time of the case-study interview, NHPPP had conducted 70 presentations and workshops and two annual conferences that have been attended by approximately 1,750 people. The program also hosted a “Solvent Alternatives Bazaar,” attended by 150 companies and 35 vendors, and co-sponsored a “Tracking Workshop” to provide information and training on electronic waste-tracking packages.

Curriculum and Internships. To instill the pollution prevention ethic into future engineers, UNH developed a curriculum and internship program for chemical engineering students. The University created a model pollution prevention training program for the students. The University also contacted New Hampshire companies to identify those interested in sponsoring interns at their facilities. The program is now self-sustaining as participating businesses fund the students for their work. As of the second year of the program, the Pollution Prevention Partnership trained and placed 25 chemical engineering students. According to the state pollution prevention coordinator, the program has been well received by students and businesses alike.

Publications. NHPPP has published several documents to help companies learn about pollution prevention, such as fact sheets on pollution prevention options and resources for targeted industries. NHPPP is also preparing case studies of New Hampshire success stories in pollution prevention. In addition, approximately 500 companies, individuals, and government officials receive *Wastelines*, a quarterly newsletter published by NHPPP.

Analysis of PPIS Impact

Pollution prevention activities in New Hampshire were very limited before the state received PPIS grant funding. Because the federal hazardous waste Capacity Assurance Program (CAP) required states to examine their capacity to manage hazardous waste, New Hampshire initiated limited waste reduction activities, including a needs survey of New Hampshire businesses, before receiving any PPIS funding. Additionally, at the time of the PPIS grant application, New Hampshire co-developed the WasteCap program to help businesses reduce their generation of solid wastes. Once PPIS funding was approved for New Hampshire, NHPPP activities were formally organized. These activities included the training of retired engineers for onsite assistance, the establishment of the Pollution Prevention Task Force, the organization of the clearinghouse and database, and outreach activities such as workshops and newsletters. The NHPPP program coordinator comments, “Although some pollution prevention activities already existed in several programs [prior to the task force], there was general recognition that many opportunities existed to shift traditional “command and control” efforts toward pollution prevention.”¹⁵

Infrastructure. As in so many other states, a formal pollution prevention program would not exist in New Hampshire without PPIS grant funding. Through the NHPPP’s efforts and those of the pollution prevention coordinator and the pollution prevention task force, pollution prevention has become firmly established in the culture of DES.

Although NHPPP has not yet secured independent funding after the grant expires, there is a bill pending in the state legislature to fund two pollution prevention positions in

the department. Even if New Hampshire does not receive the projected funding for two positions in FY96 (as part of the pending bill), the task force will continue its regulatory integration activities within the DES. In addition, technical assistance and the internship program will continue through existing resources and the partnership with UNH.

The final element of infrastructure development is the Pollution Prevention Strategy, which lays out a timetable and specific goals for DES to continue pollution prevention efforts. To achieve this, all staff are being educated about the fundamentals of pollution prevention and how to incorporate them into their daily activities. As described earlier, more than 85 percent of DES staff (375 employees) have already been trained.

Regulatory Integration. Although the location of the technical assistance program within a regulatory agency may have caused some concern in the business community, it has enabled NHPPP to more easily integrate pollution prevention into the state's regulatory program. For example, regulatory staff refer facilities to NHPPP during compliance inspections and in letters of deficiency, negotiate pollution prevention SEPs, review rules to encourage pollution prevention, and endeavor to reduce barriers to pollution prevention in the permitting process.

The task force is perhaps the most notable example of the success of program coordination through the PPIS grant. The task force meets every month, has evaluated internal barriers to pollution prevention, and has developed the Pollution Prevention Strategy to overcome these barriers and make pollution prevention the driving force within DES. The task force has also provided an arena in which to discuss multimedia issues and to help move the department in that direction.

NHPPP and the pollution prevention task force have made great strides in enhancing communication between the regulatory programs. To date, DES has initiated some cross-media inspections and is currently considering methods to expand these efforts. The Pollution Prevention Strategy sets goals and timetables to evaluate the feasibility of multimedia permits and concurrent changes in inspections and enforcement procedures.

Program Evaluation. Before the first grant application, state staff conducted a survey of New Hampshire businesses to see which services they would like from a pollution prevention program. The results of this pre-evaluation survey were used to develop the structure of NHPPP. The program is presently surveying businesses to assess once again the direction and effectiveness of the program. Results are expected by late September 1995. In order to obtain reliable information, a marketing firm was utilized to collect and evaluate the survey data. The results of this effort will allow the NHPPP to accurately assess the present demand for its services.

Program Future

A pollution prevention bill was drafted by the department and introduced in the 1995 New Hampshire legislative session. The bill contained provisions to:

- Formally establish a pollution prevention program.
- Create a legislative mandate to provide regulatory and technical pollution prevention assistance to small businesses.

- Create and fund two positions (currently funded through two PPIS grants) with non-federal funds.

While the bill was successful in the Senate, it was not as successful in the House. On a vote of 10-3, the House Environment and Agriculture (E & A) Committee voted to re-refer the bill. Through this procedure the legislation has been tabled for this session but will automatically be reintroduced in the 1996 session, which begins January 1. While E & A Committee members endorsed the policy implications of the bill, they did not all support funding the program. A legislative subcommittee had been working with the department to revise the legislation and address funding issues. The revised version of the bill will be introduced into the 1996 legislative session. Should the legislation pass, it will provide additional resources for DES pollution prevention efforts.

With the assistance of PPIS funding, DES has succeeded in establishing a strong presence for pollution prevention in the media programs and creating a multimedia technical assistance program. DES will continue to seek further integration of pollution prevention into the media programs while evaluating multimedia structures. Without the PPIS grants, efforts to incorporate pollution prevention into DES and the higher educational system in New Hampshire would have been greatly impaired.

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B.3 New Jersey

Overview

Organizational Structure. New Jersey's 1991 Pollution Prevention Act established an Office of Pollution Prevention (OPP) in the New Jersey Department of Environmental Protection (NJDEP) to implement a comprehensive, multimedia pollution prevention program. OPP concentrates on integrating pollution prevention into the state regulatory program and implementing the Pollution Prevention Act. Currently, the office is collecting summaries of approximately 700 pollution prevention facility plans mandated by the legislation. OPP also assists businesses in the development of these facility plans. While OPP focuses on pollution prevention in the regulatory program, the New Jersey Technical Assistance Program (NJTAP) concentrates on voluntary pollution prevention assessments. Located within the New Jersey Institute of Technology (NJIT), NJTAP offers direct technical assistance to small and medium-sized businesses (including onsite pollution prevention audits), as well as training, seminars, and workshops. Exhibit V-6 summarizes the different elements of New Jersey's pollution prevention program.

Program Funding and Budget. OPP currently has a staff of 14 full-time employees and a budget of \$2,100,000 funded through a fee established by the 1991 New Jersey Pollution Prevention Act. NJTAP has an annual budget of approximately \$250,000 and employs a full-time staff of four people and a part-time staff of four retired engineers. PPIS grant monies account for approximately 8 percent of NJTAP's funding. The remaining portion comes from NJDEP and other grants.

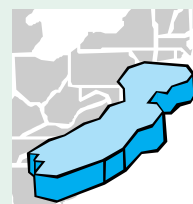


Exhibit V-6

NEW JERSEY POLLUTION PREVENTION NETWORK

Organization	Key Activities
New Jersey Institute of Technology	<ul style="list-style-type: none">● Pollution prevention opportunity assessments● Information clearinghouse● Seminars, workshops, and presentations● Training● Demonstration project● Data collection, integration, and analysis
Office of Pollution Prevention	<ul style="list-style-type: none">● Legislation● Regulations● Regulatory integration● Data collection and analysis● Compliance monitoring● Industrial training and outreach● Facilitywide permit pilot project● Award program● Guidelines

Prior to the establishment of OPP, NJDEP received three PPIS grants and helps to oversee a fourth grant administered to NJIT. New Jersey received one of the original grants, *Multimedia Source Reduction and Recycling Technical Assistance Proposal for New Jersey*, in 1989 to establish a technical assistance program to help hazardous waste generators minimize the amount of waste they produce. The grant also funded research on waste minimization opportunities, targeted technical assistance, and outreach and education to waste generators. EPA awarded the second grant, *Pollution Prevention Incentives for States Grant Application*, in June 1990. This grant provided much of the base funding for staff salaries that researched state legislation and that established the initial program in the agency, which later became permanent and stably funded via legislation. NJIT received its grant, *Development and Demonstration of an Industrial Extension Program for Local Level Implementation*, in September 1991. This grant had two purposes: 1) to develop a model for county-level pollution prevention technical assistance and 2) to provide a pollution prevention vocational training program. NJDEP's third grant, *Development of a Pollution Prevention-Based Facilitywide Permit Pilot Project*, awarded in July 1993, assisted in funding additional salary costs needed to undertake DEP's pollution prevention-based, multimedia permitting pilot project. Exhibit V-7 summarizes New Jersey's PPIS grants.

Strategy and Legislation. In addition to establishing OPP, the 1991 Pollution Prevention Act requires industrial facilities that are covered under TRI to prepare a Pollution Prevention Plan. In the Pollution Prevention Plan, among other provisions, companies must conduct a process-level materials accounting, develop a list of potential pollution prevention options, analyze a minimal list of full costs associated with their use and generation of hazardous substances, and set 5-year goals for reducing the use and generation at the source of hazardous substances. These companies are also required to report progress achieving their goals. New Jersey's legislation is consistent with EPA's waste management hierarchy and its pollution prevention definition is consistent with EPA's pollution prevention definition. New Jersey PPIS funds have only gone to true pollution prevention-based programs.

Exhibit V-7

PPIS Grant Summary

Grant	Year	Amount
Multimedia SRRTA Proposal for NJ	1989	\$300,000
Pollution Prevention for States Grant Application	1990	\$301,000
Industrial Extension Program for Local Implementation	1991	\$300,000
Pollution Prevention Facilitywide Permit Pilot Project	1993	\$207,000
Total Funding		\$1,108,000

Activities Funded by PPIS Grants

PPIS funds have enabled New Jersey to develop the state's pollution prevention infrastructure, examine facilitywide permitting, develop a county-level technical assistance program, and educate both students and businesses about pollution prevention. Specifically, PPIS funded the following activities, which are described below in detail.

- **Infrastructure development.** PPIS-funded activities to develop New Jersey's infrastructure include strategy development, data collection, recognition program, and green purchasing policy.
- **Regulatory integration.** To integrate pollution prevention into the regulatory program, New Jersey provided training to regulatory staff and tested the feasibility of facilitywide permitting.
- **Technical assistance.** PPIS-supported activities in the technical assistance area include onsite audits, a demonstration program, and an information clearinghouse.
- **Outreach and education.** Outreach and education efforts in New Jersey include integrating pollution prevention into vocational training, providing guidance manuals to educate businesses on how to develop a successful pollution prevention plan, and conducting workshops and presentations.

Strategy Development. The purpose of the 1990 grant was to develop an operational strategy and procedures for OPP, work with the state legislature on developing a statewide pollution prevention law, analyze existing NJDEP data to start measuring pollution prevention trends, and institutionalize a pollution prevention program in the agency. To attain this goal, NJDEP expanded the staff of OPP by three full-time employees. These employees established basic OPP operating procedures.

Using the state's Release and Source Reductions Report and Community Right-to-Know data, NJDEP evaluated facilities' successes in reducing pollution to determine what industry sectors to target and how to measure pollution prevention more effectively. In response to this evaluation, the pollution prevention program worked with the New Jersey Right-to-Know (RTK) program to maximize the RTK survey's ability to track progress.

Data Collection. New Jersey conducted a case study of 15 facilities to determine if throughput data, in conjunction with TRI data, are a more effective measure of pollution prevention progress than TRI data alone. In addition, NJDEP used TRI, materials accounting, economic, and environmental permitting and compliance data to develop industry profiles of five industry sectors in New Jersey.¹⁶ The state is using the profiles to examine trends.

Guidance Documents. OPP developed a guidance package for facilities preparing pollution prevention plans. NJTAP developed industry-specific manuals for electroplaters, printers, and the fabricated metal industry.

Recognition Program. Through PPIS funding, New Jersey developed a Governor's Award for Outstanding Achievement in Pollution Prevention that includes a wide range of categories.

Green Purchasing Policy. OPP evaluated the state's procurement policies for incentives and obstacles to implementing pollution prevention activities.

Facilitywide Permitting. New Jersey's 1991 pollution prevention law requires NJDEP to conduct a facilitywide pollution prevention pilot project with 18 companies. PPIS monies were provided to NJDEP to offset additional salary costs needed to undertake the facilitywide permitting project. Not only will the facilitywide permit meet the requirements of all the media programs, it will also attempt to integrate pollution prevention planning into the permit process. This unique experiment should provide valuable lessons for the states and EPA as the organization of environmental regulation along media lines is evaluated.

To implement the project, OPP established a strong relationship with NJDEP staff in charge of the media permits. As part of this relationship, OPP provided training in pollution prevention for the media program staff. Then, NJDEP staff began working closely with the industrial facility to assist in the facility's development of a draft pollution prevention plan and facilitywide permit application. Multimedia teams from NJDEP evaluated and commented on the application, which led to necessary revisions. Ultimately, 18 facilities will receive these permits, which will go through a standard permit review process. To date, one final facilitywide permit has been issued, and the remaining are expected in fall 1995.

At the end of the pilot project, state law requires OPP to analyze the effectiveness of facilitywide permitting. OPP will evaluate the environmental protection implications of facilitywide permitting and make recommendations to the state legislature about streamlining the permitting process through facilitywide permits.

Onsite Audits. NJTAP has conducted more than 75 onsite technical assistance audits with PPIS funding. Including all funding sources, the program has assisted nearly 200 companies. For a sample of one success story, see the box below. NJTAP will respond to any business that requests services with a phone call or onsite visit.

The program targeted the following SIC codes for technical assistance, in accordance with the 1991 Pollution Prevention Act:

- Paper and allied products (SIC 26)
- Chemicals and allied products (SIC 28)
- Rubber and miscellaneous products (SIC 30)
- Primary metals industries (SIC 33)
- Fabricated metal products¹⁷ (SIC 34)

NJTAP follows through with all companies that receive technical assistance and conducts an annual survey to evaluate the success of the program. NJTAP identifies two salient barriers to measuring progress. First, companies often do not respond to the technical assistance evaluation form. The response rate to the survey routinely is around 30 percent. Second, the program cannot necessarily attribute results to its actions. "If a company we visit decreases its wastes, it is often difficult to attribute it solely to our efforts or to other process changes," says NJTAP director Dr. Marcus J. Healey.

In August 1994, NJTAP surveyed 98 clients who received services in FY94. Of the 18 clients that responded to the mail survey, 77 percent rated the overall quality of service as "excellent" or "good." According to one technical assistance recipient, Union Carbide, NJTAP helped them by:

- Confirming that they were moving in the right direction
- Explaining some confusing regulations
- Providing some good literature to review

These 18 clients identified 40 distinct types of pollution prevention assistance rendered by the program, demonstrating the wide range of issues addressed by technical assistance staff. Clients reported saving a total of \$70,000 through the implementation of NJTAP recommendations. NJTAP believes that clients will continue to save money as they implement these activities.

Demonstration Project. In this project, NJTAP is testing the feasibility of using an industrial extension service to provide pollution prevention technical assistance to local businesses. NJTAP is developing the model in Burlington County, New Jersey, then plans to test the model in Puerto Rico. Puerto Rico represents an area with environmental problems that are similar yet different enough to test the transferability of the model.

Activities funded by PPIS include identifying target industries for technical assistance and conducting outreach on the program's goals and services to those industries. Staff conducted site visits to evaluate process and procedures and determined what level of assistance the program should provide. As experience with program implementation grows, staff will be evaluating the effectiveness of the model and developing a report on its implementation. A preliminary site assessment will be conducted in Puerto Rico to determine emission activity and program needs. Finally, an Advisory Management Committee (AMC) will be created to oversee the implementation and potential expansion of the model in Puerto Rico.

Notable achievements of the demonstration project include:

- The Burlington County program received the Governor's Award for Outstanding Achievement in Pollution Prevention.
- The Burlington County program compiled a list of local printers.
- The Burlington County program manager is developing recommendations for a small-quantity generator collection program.
- NJTAP hosted the Puerto Rican Corporation for Technological Development of Tropical Resources (TROPICO) representatives for pollution prevention training.
- The Puerto Rico TAP agreed to host a workshop for the metal finishing and fabrication industry.

Information Clearinghouse. While PPIS funds do not specifically support an information clearinghouse, NJTAP has collected more than 2,000 articles in 70 different pollution prevention categories. In addition, the program has more than 50 videotapes on pollution prevention.

Curriculum. NJTAP implemented a program, the Vocational Environmental Education Program (V-Project), to integrate pollution prevention into vocational education. The major goal of the V-Project is to develop curricular materials for vocational stu-

NJTAP Success Story

City Auto Radiator

Activity: Mechanical cleaning eliminated a significant portion of discharge to POTWs and saves the company \$1,650 per year.

Activity: The company implemented counterflow rinsing and tank refill procedures to achieve a zero discharge process, reducing discharge to POTWs by 100,000 gallons.

Activity: The company switched to water-based paints from solvent-based paints, which completely eliminated volatile organic compound emissions.

dents in conjunction with the New Jersey Department of Education and NJDEP. In addition, V-Project staff will conduct training courses for corporate management that will combine pollution prevention activities with other aspects of a total quality management program. Thus far, NJTAP has developed a workplan for the V-Project, and the technical committee is commenting on a draft curriculum.

Workshops and Presentations. PPIS funding enabled NJTAP to conduct more than 40 presentations reaching more than 600 people. In addition to electroplaters, printers, and the fabricated metal industry, NJTAP targeted textile finishers and the dry cleaning industry for workshops and presentations. For these groups, NJTAP conducted extensive training sessions for more than 100 people using PPIS funds.

Analysis of PPIS Impact

PPIS provided seed money to launch New Jersey's pollution prevention program, both at OPP and NJTAP. OPP began with one staff person funded by an existing NJDEP program but did not have a significant operational budget. PPIS funding enabled the program to hire additional staff and work with the legislature to develop enabling legislation. Prior to PPIS funding, the technical assistance program did not exist. PPIS monies enabled the program to get off the ground and to secure future funding from the state. Now, PPIS funds account for only about 8 percent of NJTAP's funding.

Infrastructure. While OPP existed before the first PPIS grant, it had no permanent funding source and was only just developing its program. PPIS allowed the development of enabling legislation to make OPP a permanent part of NJDEP. During this time, OPP evaluated potential roles of the regulatory programs in promoting pollution prevention and developed guidelines for incorporating pollution prevention into NJDEP activities.

PPIS funding enabled New Jersey to develop the RTK reporting to be an initial tool for tracking industrial pollution prevention progress. It was also instrumental in developing the processes by which the media programs would coordinate the development of facilitywide permits. The project might ultimately result in the transition to a truly multimedia regulatory agency.

The grants have also helped NJTAP and OPP to coordinate efforts. The programs interact frequently (at least two to four meetings per month) to coordinate activities.

Regulatory Integration. PPIS increased regulatory integration by funding a part of the facilitywide permitting project. The project helped reduce barriers to pollution prevention by promoting increased communication and coordination between regulatory staff. Staff from all of the media programs worked together with OPP staff to develop procedures for writing a facilitywide permit. Without PPIS funding, the regulatory program would not have been able to support this project.

Clearly, New Jersey is far ahead of many of the states in developing a multimedia permit process. This pilot project, and the report on its effectiveness, will serve as a model for all states that are considering multimedia reform.

Program Evaluation. Currently, OPP is conducting its own program evaluation and has also contracted with an outside consultant to help determine the impact of the pro-

gram on pollution prevention. The study evaluates the pollution prevention planning process and its impact on companies' actual waste generation. This process has been simplified by the collection of throughput data, which allows an actual accounting of waste generated based on production output.

Program Future

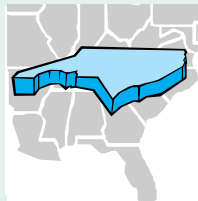
NJDEP and NJTAP will continue to coordinate efforts in the future. While OPP continues to focus on regulatory affairs, NJTAP will focus on outreach, information dissemination, education, and training and pollution prevention technology development. Future PPIS grant requests from NJTAP will be project oriented.

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B.4 North Carolina

Overview

North Carolina, one of the original states to establish a pollution prevention program, began implementing pollution prevention activities, such as a waste reduction conference and workshops, as early as 1981.¹⁸ Early funding for pollution prevention education activities was obtained from the Mary Reynolds Babcock Foundation. The state instituted the program in the state regulatory agency in FY85 with a \$116,000 appropriation from the state legislature.

Organizational Structure. While North Carolina has reorganized its program several times since its inception, the basic program structure has not changed since 1990. At that time, the state established the Office of Waste Reduction within the Department of Environment, Health, and Natural Resources (DEHNR). Within the Office of Waste Reduction, the state established two programs: the Solid Waste Reduction Program and the Pollution Prevention Pays (PPP) Program. The Solid Waste Reduction Program focuses on the reduction of municipal solid waste. The PPP program provides a variety of services to North Carolina businesses in multimedia waste reduction, including on- and offsite technical assistance, an information clearinghouse, education, training, outreach, and challenge grants. The goal of the program is to promote the elimination, reduction, or recycling of industrial waste prior to treatment or disposal. PPP also coordinates activities with other components of the state environmental protection program, endeavors to integrate the pollution prevention ethic into the regulatory staff, and evaluates pollution prevention progress.

The Pollution Prevention Research Center at North Carolina State University also provides a number of pollution prevention services, including research, onsite technical assistance for large businesses, outreach, and technical training. These activities are coordinated with the PPP program.

The Waste Reduction Center of the Southeast, established in 1989, was a joint venture between North Carolina, EPA Region 4, and the Tennessee Valley Authority. The center provides onsite technical assistance and training to the Region 4 states¹⁹ using a staff of retired engineers.

Exhibit V-8 depicts the organizational structure of North Carolina's pollution prevention program.

Program Funding and Budget. The PPP program employs a staff of 12 full-time people and has a budget of \$500,000 per year. More than 80 percent of funding comes from the state (from the state general fund and emission fees). North Carolina, one of the original 13 PPIS grant recipients, also received two PPIS grants. EPA awarded the first grant, *Multimedia Waste Reduction Management System for Government and Industrial Applications*, in March 1989. The grant was a cooperative effort between the Department of Natural Resources and Community Development (the predecessor to DEHNR), the Governor's Waste Management Board, the Department of Human Resources, and the Department of Crime Control and Public Safety. The department received a second PPIS grant, *Small Business Waste Reduction Technical Assistance*, in September 1993. Under this

Exhibit V-8 NORTH CAROLINA POLLUTION PREVENTION NETWORK

Organization	Key Activities
Department of Environment, Health, and Natural Resources	<ul style="list-style-type: none"> • Technical assistance • Training • Outreach and education • Information clearinghouse • Matching grants • Regulatory integration • Program coordination • Program evaluation
North Carolina State University	<ul style="list-style-type: none"> • Research • Technical assistance • Training • Outreach
Waste Reduction Center of the Southeast	<ul style="list-style-type: none"> • Technical assistance • Training • Outreach and education • Information clearinghouse

grant, members of the PPP Program worked closely with the Office of Small Business Ombudsman in the DEHNR's Air Quality Section to provide technical assistance to small businesses. Exhibit V-9 summarizes North Carolina's PPIS grants.

Strategy and Legislation. North Carolina enacted its first piece of waste reduction legislation in 1981. As a result of recommendations by the Governor's Waste Management Task Force, North Carolina enacted the Waste Management Act of 1981, which issued a strong policy statement that hazardous waste should be minimized:

The General Assembly of North Carolina hereby finds and declares that prevention, recycling, detoxification, and reduction of hazardous wastes should be encouraged and promoted.²⁰

A second piece of legislation, the 1989 Hazardous Waste Management Commission Act, formally established the PPP program at DEHNR. As specified in the act, the pur-

Exhibit V-9

PPIS Grant Summary

Grant	Year	Amount
Multimedia Waste Reduction Management System	1989	\$300,000
Small Business Waste Reduction Technical Assistance	1993	\$ 56,000
Total Funding		\$356,000

pose of the program is to promote voluntary waste and pollution reduction efforts through information, grants, and technical assistance. The legislation also establishes a fee structure to encourage generators of hazardous waste to minimize the quantity and toxicity of the waste they generate and requires them to submit a description of any program they have to minimize waste.

Activities Funded by PPIS Grants

Unlike most other states, North Carolina already had an established, funded pollution prevention program at the outset of the PPIS grant program in 1989. Thus, the state used PPIS funding to further develop its pollution prevention infrastructure. To do so, the PPP program created a new data management system. PPIS also funded technical assistance to businesses.

Database Development. PPIS funded the development of a multimedia information management system to link all of the environmental databases in the DEHNR, including the TRI, annual reports from hazardous waste generators, and air emission and water discharge monitoring data. The department uses the system to compare data reporting by industries and assess opportunities for waste reduction at specific facilities. The system also helps the PPP program target activities, including technical assistance, training, grants, research, and demonstration projects, to priority industries in the state.

To develop the system, the PPP program reviewed existing reporting formats to assess the data they collect, including level of detail, units of measurement, and compatibility. From each report, the program extracted the most useful data to characterize sources and types of releases. Using this analysis, the program assessed potential integration methods for feasibility, ease of implementation, and applicability for the intended uses of the waste reduction management system. The program developed a users' manual for the data system and training materials, then trained DEHNR staff on how to use the system.

Technical Assistance. The federal Clean Air Act Amendments (CAAA) require that states assist small businesses in meeting new air quality standards. PPIS funds allowed North Carolina to provide waste reduction technical assistance targeted to thousands of North Carolina small businesses. Through PPIS funding, the PPP program ensured that waste reduction remains a key component in the state's overall small business assistance program under the CAAA.

To complete this grant, the PPP program first identified appropriate small business categories, then developed and distributed informational materials to the targeted industries. During this process, the program formulated training materials and identified future research needs for pollution prevention in small businesses. Other activities included monitoring of technical assistance and regulatory efforts to ensure that pollution prevention methodologies are incorporated and establishing a quality assurance and quality control program.

Thus far, PPIS funds have enabled North Carolina to provide technical assistance to 74 small businesses. Of these companies, 11 received onsite audits and 63 received publications or technical assistance over the telephone.

Analysis of PPIS Impact

Infrastructure. Instead of funding the development of a pollution prevention strategy or the development of state legislation, PPIS funding helped North Carolina to create a data management system. This system integrates reporting data statewide and enables the program to target pollution prevention activities such as technical assistance and training. Thus, PPIS helped North Carolina expand the infrastructure of its pollution prevention program, rather than initiate a program as it did in New Hampshire or Delaware.

Program Evaluation. PPIS funding has helped North Carolina measure the progress of pollution prevention activities. The state recently conducted an evaluation of the technical assistance portion of its program. The survey asked facilities which of the pollution prevention recommendations they implemented and why or why not. Of the businesses surveyed, 90 percent implemented at least one of the recommendations. Overall, 38 per-

Regulatory Integration Efforts in North Carolina*

While the PPP program remains entirely voluntary, it does coordinate activities with regulatory programs in the state to foster pollution prevention. Activities include rule development, training, referrals, and supplemental environmental projects (SEPs). Currently, the program is working closely with water quality staff to review new water discharge rules to identify possible means of incorporating pollution prevention concepts. Draft rules include a requirement that facilities consider pollution prevention activities under way when they submit the permit application. The program has also assisted the hazardous waste program in developing pollution prevention SEPs and analyzing the annual hazardous waste report. Regulatory staff often refer the facilities to the PPP program for technical assistance. Currently, the program is developing guidance materials for hazardous waste inspectors and boilerplate language to promote pollution prevention in notices of violation.

The PPP program has also developed a train-the-trainer program to educate regulatory staff. All air quality staff were trained through the program. Permit writers were trained to point out pollution prevention options to facilities as they develop the permits. Recently, the water quality program also requested such training. The PPP program is also planning to train regulatory staff on pollution prevention options by industry sector. While a few individuals have resisted incorporating pollution prevention into their daily work, most have embraced pollution prevention concepts. Given the increased time and effort needed to fully incorporate pollution prevention into daily work, pollution prevention staff are encouraged by the widespread acceptance by the regulatory staff.

* Regulatory integration activities are not directly funded by PPIS.

cent of the recommendations given were implemented. All but one of those surveyed thought that the pollution prevention program was a good use of taxpayer dollars.

The PPP program encountered a few difficulties conducting the evaluation. First, a number of companies did not respond to the survey. A student intern, who designed the survey, followed up with all of the companies to encourage them to respond to the survey and clarify responses. The PPP program manager believes that this followup was crucial to ensuring a high response rate and quality data. A major difficulty was quantifying the amount of waste reduced as a result of implementing the suggestions. While some companies did not want to release this information for fear of release to competitors, most companies did not have the time or resources to measure waste reduction. Evidence from companies willing to release information indicates that most saved between \$10,000 and \$20,000 per year as a result of the recommendations, and some saved as much as \$500,000 per year.

The program has not yet tried to measure the effectiveness of other activities, particularly its outreach efforts, although it is considering conducting a readership survey of its newsletter. While not a formal means of measuring success, the program manager notes that during a 1-year period when the newsletter was not published, the program received a number of requests for it.

North Carolina is currently developing a methodology to help itself and other states measure pollution prevention progress. Modeled on the NIST program, the methodology will help states measure the cumulative effect of services such as onsite assistance, newsletters, and grants to individual businesses.

Program Future

As described above, North Carolina will focus some of its resources in the coming years on developing a methodology to measure pollution prevention progress. The PPP program also will continue providing outreach and education to state businesses and residents. In addition, the program hopes to further integrate pollution prevention into the regulatory program. While North Carolina would like to retain the same level of pollution prevention activity in the future, the state legislature has reduced the program's funding in FY96.

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B.5 South Dakota

Overview

Organizational Structure. The South Dakota Department of Environment and Natural Resources (DENR), the state environmental regulatory agency, houses South Dakota's pollution prevention program. The primary mission of the program is to integrate the pollution prevention ethic into all state activities. With only one half-time employee and a budget of \$427,000, the program's main function is to oversee the budget and coordinate activities. To accomplish its mission, DENR has established partnerships with other state agencies, county governments, the academic community, and businesses. Instead of hiring a large staff solely dedicated to pollution prevention within DENR, the program employs the assistance of its partners to implement pollution prevention activi-

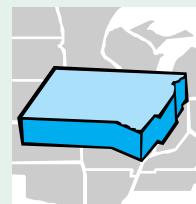


Exhibit V-10 SOUTH DAKOTA POLLUTION PREVENTION NETWORK

Organization	Key Activities	
Department of Environment and Natural Resources	<ul style="list-style-type: none"> ● Regulatory integration ● Advisory committee ● Coordination ● Presentations ● Newsletter 	<ul style="list-style-type: none"> ● Public service announcements ● Conferences ● Staff training ● Program evaluation ● Clearinghouse
Other State Agencies	<ul style="list-style-type: none"> ● Staff training ● Green purchasing policies ● Integrated pest management 	
South Dakota Discovery Center	<ul style="list-style-type: none"> ● Teaching module ● Technical assistance for a community 	
State Library	<ul style="list-style-type: none"> ● Library of pollution prevention videos 	
State University Cooperative Extension Service	<ul style="list-style-type: none"> ● University courses ● Workshops ● Pollution prevention training for teachers 	<ul style="list-style-type: none"> ● Bootstraps video ● Home*A*Syst modules
Todd and Mellette County Conservation Districts	<ul style="list-style-type: none"> ● Technical training ● Technical assistance ● Monitoring manual 	<ul style="list-style-type: none"> ● Technology transfer ● Evaluation
Trade Associations	<ul style="list-style-type: none"> ● Distribution of Bootstraps manual ● Computer programs based on Bootstraps 	

Exhibit V-11**PPIS Grant Summary**

Grant	Year	Amount
Sustaining Pollution Prevention in South Dakota	1992	\$123,000
Enhancing Pollution Prevention in South Dakota	1993	\$112,500
Total Funding		\$235,500

ties. The fact that the partners implement the pollution prevention activities themselves furthers the integration of the pollution prevention ethic into these organizations. Exhibit V-10 describes the roles of pollution prevention partners in South Dakota.

Program Funding and Budget. The PPIS grants, along with state and local match provided by program participants, fund the entire pollution prevention program in South Dakota. DENR received two PPIS grants. EPA awarded the first grant, *Sustaining Pollution Prevention in South Dakota*, in September 1992. The grant established a partnership between DENR and the South Dakota Departments of Agriculture, Transportation, Energy, Health, and Games, Fish, and Parks. The partnership also included the South Dakota State University Cooperative Extension Service and Research Station. In October 1993, EPA awarded the second grant, *Enhancing Pollution Prevention in South Dakota*, which provided funding to expand outreach efforts to all sectors (including children) and to transfer lessons learned from Bootstraps to other programs. Exhibit V-11 summarizes South Dakota's PPIS grants.

Strategy and Legislation. In 1992, DENR formally incorporated pollution prevention into its goal statement and identified pollution prevention as the first alternative for all programs. In doing so, South Dakota has developed an environmental policy consistent with EPA's policy. The state has also incorporated pollution prevention into the State-EPA Agreement. At this time, South Dakota does not plan to enact any specific pollution prevention legislation.

Activities Funded by PPIS Grants

PPIS funded a wide range of activities in South Dakota, from infrastructure development to technical assistance and training, regulatory integration, and outreach and education. These activities are described further below.

- **Infrastructure.** PPIS funding allowed South Dakota to form an advisory committee as well as build the pollution prevention infrastructure through "green" purchasing policies.
- **Regulatory integration.** PPIS supports regulatory integration in South Dakota by funding training for staff in the regulatory program.
- **Technical assistance and demonstration projects.** Bootstraps, a technical assistance demonstration project, has helped South Dakota farmers and ranchers to prevent pol-

lution through education and onsite assistance. PPIS also funds the transfer of lessons learned from Bootstraps to other states as well as an information clearinghouse.

- **Education and outreach.** Outreach activities funded by PPIS include conferences, teacher training, outreach materials, presentations, and public service announcements.

Task Force and Advisory Committee. The first PPIS grant enabled DENR to commission a task force to assess pollution prevention opportunities within both DENR and the entire state government. The task force included one representative from each of the five divisions within DENR. After examining the department's activities, the task force recommended that pollution prevention become the department's primary objective. As a result of the task force recommendation, DENR issued a policy statement declaring pollution prevention as DENR's primary objective. PPIS funds also enabled the task force to develop an action plan to implement pollution prevention throughout DENR and the state.

The second PPIS grant funded a reorganization of the five-member task force into an 11-member advisory committee. The advisory committee represents all of the major programs within DENR and continues to guide both DENR and other state agencies in fostering pollution prevention.

Green Purchasing Policies. In addition to examining opportunities within DENR, the task force assessed pollution prevention opportunities throughout the entire state government. As a result of this assessment:

- The State Office of Purchasing and Printing purchases products made from postconsumer materials when economically feasible.
- State agencies purchase energy-efficient computers.
- The Division of Buildings and Grounds substitutes nonhazardous materials for hazardous material when possible.
- The state uses integrated pest management principles, which minimize pesticide use, to control insects.

Regulatory Integration. As a result of the recommendations of the advisory committee, DENR management has instructed the regulatory programs to integrate pollution prevention into all activities. First, the program trained DENR and Department of Agriculture staff in pollution prevention techniques. DENR now conducts 10 to 12 multimedia inspections each year and includes pollution prevention provisions in all mining permits. In the future, DENR plans to conduct all inspections on a multimedia basis and use a multimedia approach to issuing all permits. The regulatory program is also incorporating pollution prevention into the enforcement process. For example, when the spill prevention program issues a notice of violation, it includes information on spill prevention in the notices of violation and recommends that the violator implement a spill prevention program. The program also plans to supply onsite technical assistance to repeat violators on how to develop a spill prevention plan.

Technical Assistance. In coordination with the Todd, Mellette, Gregory, Stanley, and Jerauld Conservation Districts, and the Lower James Resource Conservation Development Association, DENR is promoting better farmland and ranch management through the Bootstraps Project, funded by PPIS. This project aims to teach farmers and ranchers that sustaining a profitable operation is directly related to using practices that maintain or improve the environmental health of range and crop lands. Under

Bootstraps, each family learns how to complete a natural resource inventory for their ranch or farm, develop a management plan, and select BMPs to implement the plans. DENR provides technical assistance to help select and implement the BMPs to both protect the environment and promote economic stability.

As part of the project, DENR and its partners created a manual and video to assist participants. DENR received such positive feedback on the Bootstraps video and manual that the National Cattleman's Association decided to reprint and distribute the manual to association members as a primary tool for improving operations and resource management. The National Cattleman's Association also plans to develop a computer program based on the manual. Furthermore, DENR leveraged funding (\$25,000) from a private company, Moorman Feed Company, to produce the manual. As a result of their participation in the Bootstraps Project, farmers in Todd and Mellette Counties have embarked on a grassroots effort to increase ground water protection in their counties.

DENR achieved the following accomplishments with the Bootstraps Project:

- The Bootstraps video and manual were developed and distributed (more than 140 copies).
- 120 families from 100 farms or ranches participated in the project.
- More than 80 percent of the participants have implemented one or more BMP.
- About 60 percent of the participants have implemented two or more BMPs.
- Pollution on approximately 620,000 acres of ranch and farmland in five counties was reduced.

Technology Transfer. Lessons learned from the Bootstraps Project will be transferred into a model for pollution prevention in rural communities including Native American reservations. DENR has made presentations on Bootstraps to a wide range of organizations, including several counties in South Dakota, the National Association of Conservation Districts, and the National Stockgrower's Association. South Dakota also hopes to transfer the program to other states and possibly other countries. The program has made presentations to the North Dakota Department of Agriculture, and several other states have also requested presentations, including Colorado, Nebraska, Missouri, and Kansas. Representatives from several Eastern European governments have also requested additional information on Bootstraps. South Dakota has presented lessons learned from Bootstraps to over 500 people thus far.

Information Clearinghouse. A central clearinghouse was developed to answer informational requests. Some of the topic areas available include: household hazardous waste, composting, spill prevention, energy conservation, Farm*A*Syst, and Home*A*Syst.

Conferences. To introduce the state's urban population to pollution prevention, DENR is planning two conferences to be held over an interactive television network. One conference will target businesses and industries, and a second conference will target local governments. DENR also plans to attend a conference on pollution prevention for Native American tribes.

Publications. DENR developed a brochure to explain the benefits of pollution prevention to the general public of South Dakota and a booklet on household hazardous waste reduction. DENR also developed a brochure describing South Dakota's Green Lights Program, a voluntary program to encourage businesses to use energy-efficient lighting.

Technical Training. In conjunction with the South Dakota Discovery Center, DENR developed a training course for teachers on pollution prevention. Together, the organizations trained 170 school teachers from 20 school districts on how to incorporate environmental awareness into the classroom. The training included specific modules on pollution prevention. DENR has received approximately 60 to 70 followup calls from teachers for additional information and plans to offer the training at additional locations.

Presentations and Workshops. DENR has presented pollution prevention information to many South Dakota trade associations and businesses, as well as to the general public. In addition to presentations designed to share the lessons learned from Bootstraps, DENR has:

- Purchased and distributed 1,500 “waste wheels” to inform homeowners of pollution prevention alternatives.
- Distributed pollution prevention information to more than 50,000 people at the South Dakota State Fair.
- Conducted a holistic management workshop for farmers.
- Conducted a presentation on pollution prevention at a TRI workshop sponsored by EPA and DENR.
- Conducted a presentation at an annual meeting of the South Dakota Council of Teachers of Mathematics and the South Dakota Science Teachers Association (usually attended by more than 700 teachers).

To promote spill prevention in homes and businesses, the state is developing three public service announcements. The series will discuss how to prevent home heating fuel spills.

Analysis of PPIS Impact

Infrastructure. PPIS funding has enabled South Dakota to develop a pollution prevention program and institutionalize the concept of pollution prevention. Prior to the PPIS grant, South Dakota had no formal pollution prevention program. While some staff in the media programs conducted ad hoc pollution prevention activities, such as training industry representatives in ways they could reduce pollutants in their industrial discharges, no formal pollution prevention strategy existed, and coordination of activities between the media programs did not occur.

One of the major successes of this grant is that it has enabled DENR to coordinate activities between several state agencies and South Dakota State University. The grant also established links between DENR and trade associations, businesses, and national projects, including:

- Department of Agriculture
- Department of Transportation
- Department of Energy
- Department of Health
- Department of Games, Fish, and Parks
- State University Cooperative Extension Service and Research Station
- National Cattleman’s Association
- Farm*A*Syst

Regulatory Integration. The grant also helped DENR establish pollution prevention links within all media programs in DENR, including the nonpoint source, spill prevention, air, and hazardous waste programs. The pollution prevention program supplies technical information on pollution prevention to each of these regulatory programs. Given the small size of DENR, pollution prevention staff can keep in close contact with the regulatory programs.

DENR, on the recommendation of the grant-funded task force, identified pollution prevention as the first alternative for the department. Thus, PPIS directly contributed to the shift of the prevailing attitude from pollution control to prevention, followed by recycling. Through this policy, DENR management has instructed the regulatory programs to integrate pollution prevention into all activities. As described above, DENR is in the process of converting both inspections and permitting from a single-medium approach to a multimedia approach.

Program Evaluation. The pollution prevention program has conducted a survey of all Bootstraps participants on the Rosebud reservation and Todd and Mellette Counties to measure the success of the program, including BMPs implemented. The survey found that more than 80 percent of the participants have implemented one or more BMP. In addition, the program includes an evaluation component in all of the tasks it subcontracts. For example, for the public relations campaign, the program collected such information as the number of people viewing television ads, demographics of viewers, etc. It records the number of participants attending training sessions and surveys these participants for their reactions to the materials presented. For technical materials, the program engages in a peer review of the materials to ensure a high-quality content.

Program Future

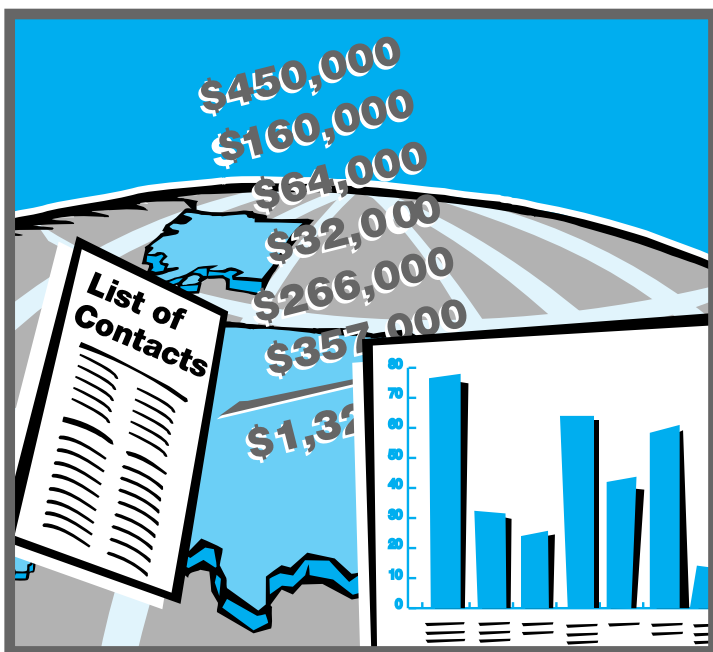
While DENR has not secured future financing, the program believes that such financing will not be necessary once grant objectives have been achieved. For example, the state will move the successful Bootstraps program to the nonpoint source program. By institutionalizing pollution prevention into the media programs, a separate pollution prevention office will not be necessary.

Contact

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Pollution Prevention Program
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 Fax: 605 773-4068



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- ¹ New Hampshire Department of Environmental Services, *Pollution Prevention Strategy*, January 1995.
 - ² While a state regulatory agency might coordinate program activities, different groups such as universities, local governments, or small business development centers often implement pollution prevention activities. These relationships are further explored in the exhibits throughout this section.
 - ³ Chapter I describes the methodology for choosing these states.
 - ⁴ Delaware 1990 Waste Minimization/Pollution Prevention Act.
 - ⁵ Results of this survey were unavailable at the time of publication..
 - ⁶ New Hampshire Department of Environmental Services *Strategic Plan*, 1994, Page III-1.
 - ⁷ New Hampshire Department of Environmental Services *Pollution Prevention Strategy*.
 - ⁸ New Hampshire Department of Environmental Services, *Pollution Prevention Strategy*, January 1995, pp.12-13.
 - ⁹ New Hampshire *Pollution Prevention Strategy*.
 - ¹⁰ New Hampshire Department of Environmental Services, *Barriers to Pollution Prevention Within a Regulatory Agency*, January 1995.
 - ¹¹ New Hampshire Department of Environmental Services small-quantity generators produce under 100 kg hazardous waste per month.
 - ¹² For more information about incorporating pollution prevention into enforcement and compliance at DES, see *Barriers to Pollution Prevention Within a Regulatory Agency*, January 1995.
 - ¹³ New Hampshire Department of Environmental Services, *Environmental Fact Sheet: Contaminated Cloth Wipers for Laundering*, Technical Bulletin WMD-1994-17.
 - ¹⁴ *Barriers to Pollution Prevention Within a Regulatory Agency*, January 1995, p. 13.
 - ¹⁵ Personal communication with Stephanie D'Agostino, November 1994.
 - ¹⁶ NJDEP, Profile of New Jersey Industry: Issues Relating to Pollution Prevention at Facilities in SIC Groups 26, 28, 30, 33, and 34, April 1994.
 - ¹⁷ Except machinery and transportation equipment.
 - ¹⁸ For additional information on the North Carolina program, see "Factors contributing to the development of state programs: A case study, In: Wigglesworth, D., ed. *Pollution Prevention: A Practical Guide for State and Local Governments*.
 - ¹⁹ Region 4 states include Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, and Tennessee.
 - ²⁰ Hunt, G. 1993. Factors contributing to the development of state programs: A case study. In: Wigglesworth, D., ed. *Pollution prevention: A practical guide for state and local governments*. p. 16.



Appendix

- A. Ranked Distribution of Total Funding by State
- B. Funding Breakdown by State
- C. Funding Breakdown by Grant
- D. Groups Targeted by PPIS Grantees
- E. List of Contacts

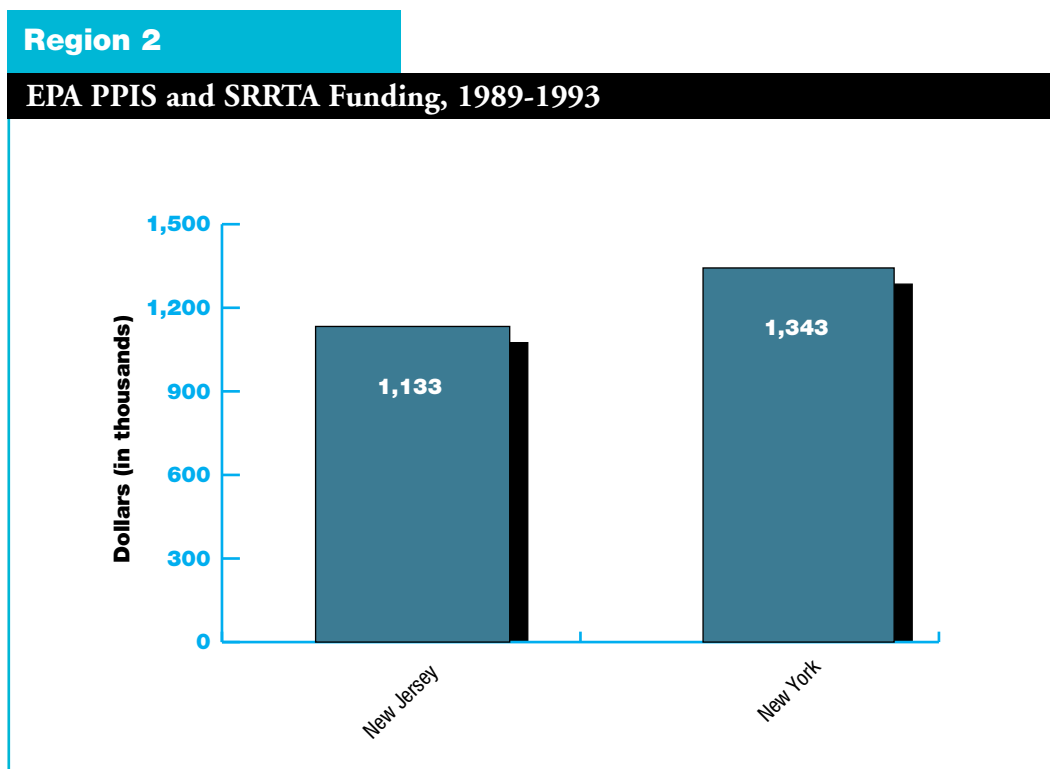
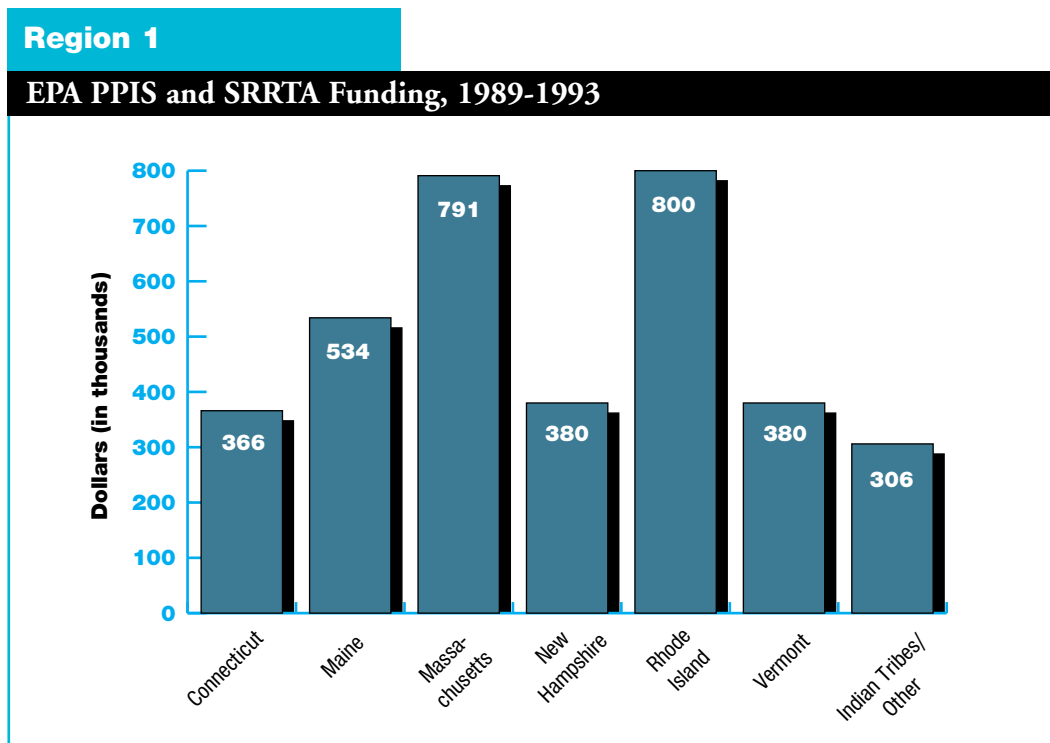
A. Ranked Distribution of Total Funding By State

State	Number of Grants	Total Funding
New York	6	\$1,342,548
New Jersey	4	1,132,944
Rhode Island	3	800,000
Massachusetts	5	791,294
Iowa	4	724,378
Michigan	3	715,572
Washington	3	697,000
Illinois	3	694,000
Nebraska	2	675,000
Georgia	3	626,250
Indiana	3	626,250
Colorado	3	597,445
Oregon	2	561,616
Delaware	2	545,035
Maine	3	533,804
California	2	504,210
Texas	3	496,978
Alaska	3	488,120
Pennsylvania	2	466,547
Virginia	2	441,970
West Virginia	2	441,970
Region 9 Territories	2	422,755
Utah	2	422,211
Oklahoma	2	410,000
Louisiana	2	393,305
New Hampshire	2	380,050

Ranked Distribution of Total Funding By State (Continued)

State	Number of Grants	Total Funding
Vermont	2	\$380,000
Connecticut	2	366,396
Tennessee	2	361,250
South Carolina	2	356,250
Florida	2	356,250
Mississippi	2	356,250
North Carolina	2	356,250
Kentucky	2	356,250
Wisconsin	2	340,000
Missouri	2	324,689
Kansas	1	300,000
Nevada	1	299,888
Minnesota	1	299,634
Region 10 Tribes	5	297,045
Montana	2	290,000
Region 6 Tribes	2	265,000
South Dakota	2	235,609
Alabama	2	231,250
Arkansas	1	229,944
Ohio	2	215,000
Idaho	1	202,500
Arizona	1	200,000
Maryland	1	200,000
Wyoming	1	200,000
Hawaii	1	185,316
New Mexico	1	58,022

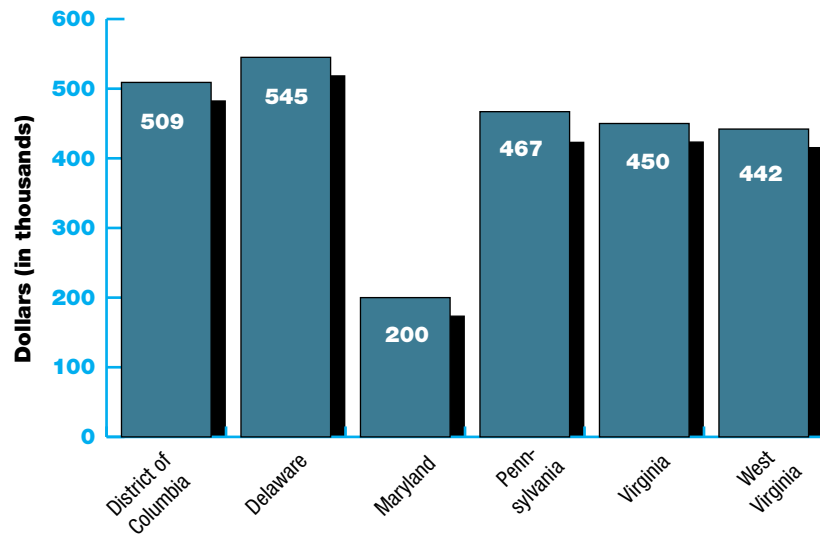
B. Funding Breakdown By State



Funding Breakdown By State (Continued)

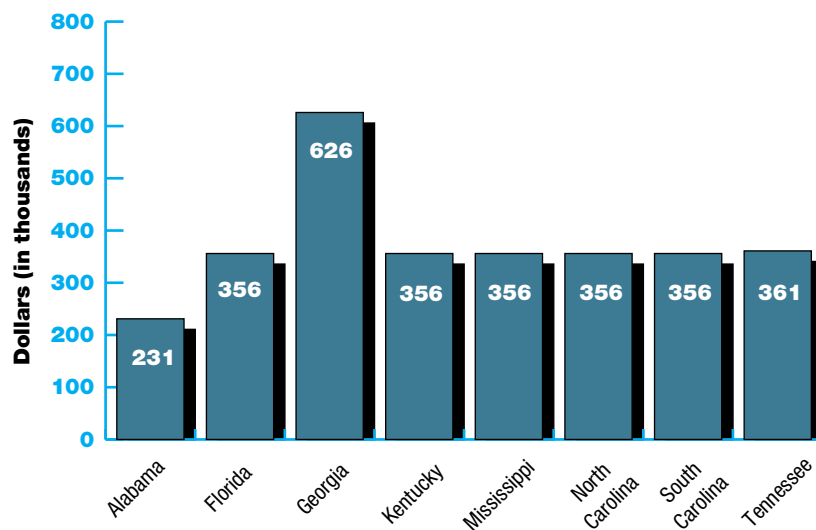
Region 3

EPA PPIS and SRRTA Funding, 1989-1993



Region 4

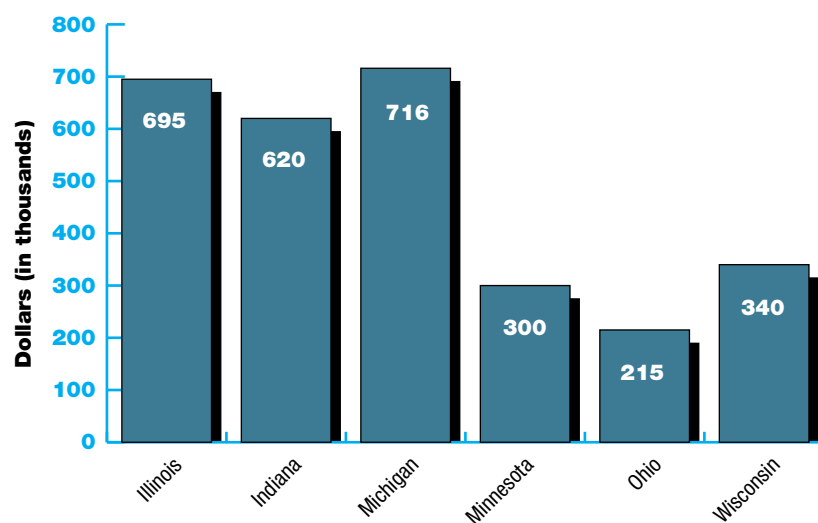
EPA PPIS and SRRTA Funding, 1989-1993



Funding Breakdown By State (Continued)

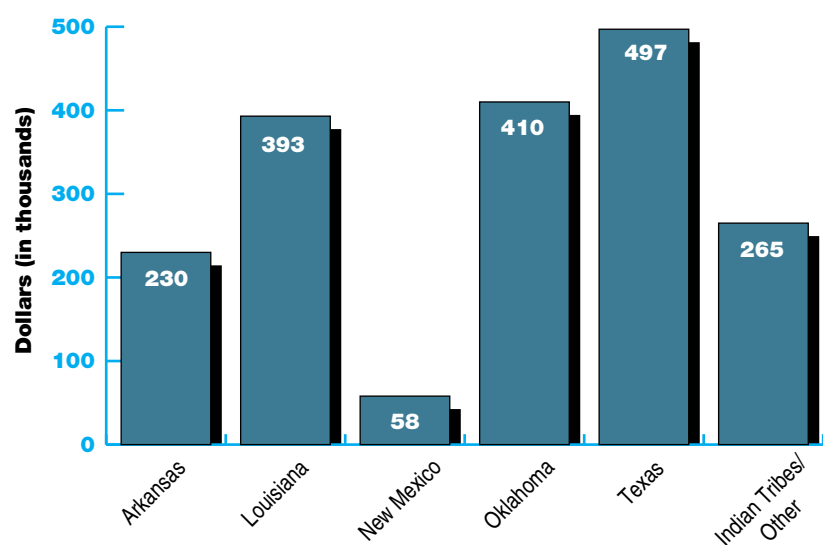
Region 5

EPA PPIS and SRRTA Funding, 1989-1993



Region 6

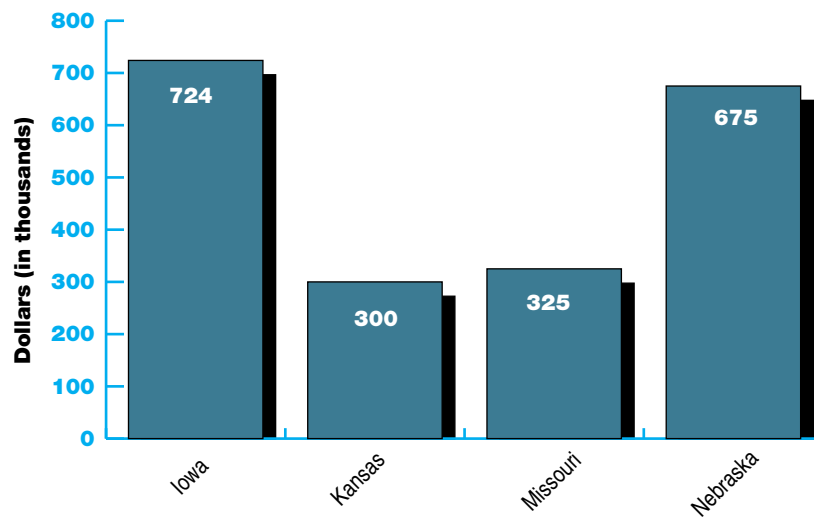
EPA PPIS and SRRTA Funding, 1989-1993



Funding Breakdown By State (Continued)

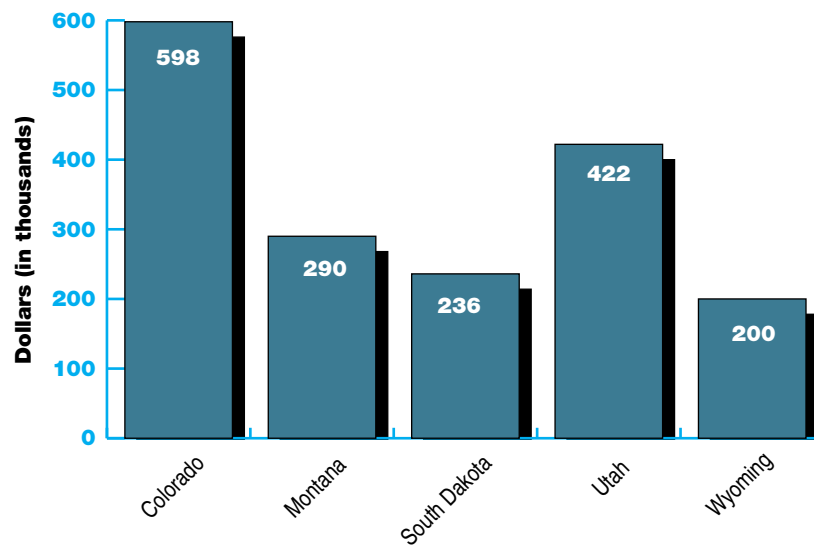
Region 7

EPA PPIS and SRRTA Funding, 1989-1993



Region 8

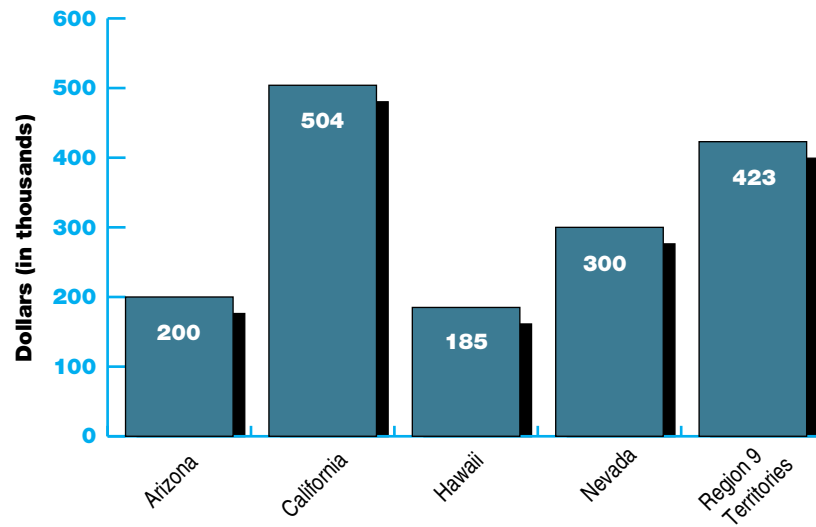
EPA PPIS and SRRTA Funding, 1989-1993



Funding Breakdown By State (Continued)

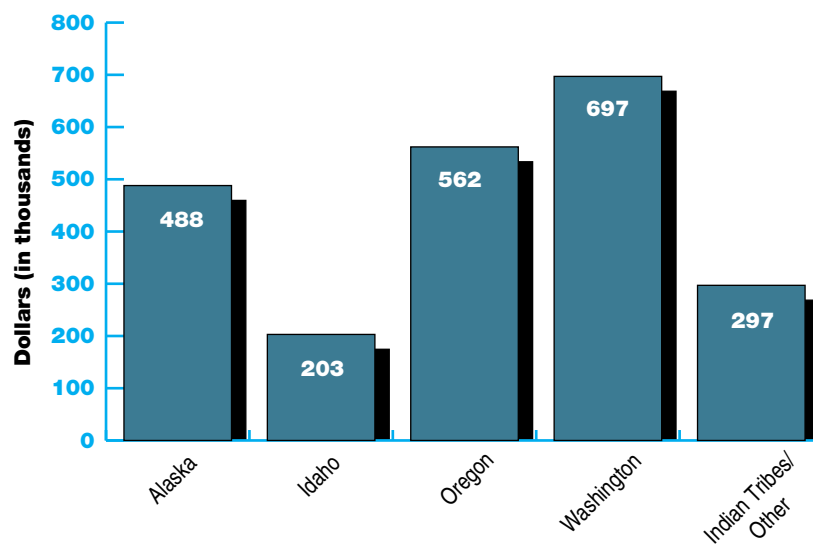
Region 9

EPA PPIS and SRRTA Funding, 1989-1993



Region 10

EPA PPIS and SRRTA Funding, 1989-1993



C. Funding Breakdown By Grant

Organization	Year	Federal Funds	State Match	Total
Region 1				
Connecticut				
Technical Assistance Program	1993	\$67,000	\$67,000	\$134,000
Department of Environmental Protection	1991	\$299,396	\$299,396	\$598,792
Total		\$366,396	\$366,396	\$732,792
Indian Tribes/Other Organizations				
New Eng. Waste Management Officials Assn.	1989	\$305,525	\$30,000	\$335,525
Total		\$305,525	\$30,000	\$335,525
Maine				
Department of Environmental Protection	1993	\$59,565	\$59,565	\$119,130
Department of Environmental Protection	1992	\$200,000	\$483,353	\$683,353
University of Maine	1990	\$274,239	\$42,995	\$317,234
Total		\$533,804	\$585,913	\$1,119,717
Massachusetts				
Department of Environmental Protection	1993	\$50,000	\$50,000	\$100,000
Office of Technical Assistance	1993	\$100,000	\$160,000	\$260,000
Coastal Zone Management	1992	\$64,000	\$64,000	\$128,000
Department of Environmental Protection	1990	\$288,384	\$32,043	\$320,427
Department of Environmental Management	1989	\$288,910	\$266,740	\$555,650
Total		\$791,294	\$572,783	\$1,364,077
New Hampshire				
Department of Environmental Services	1993	\$84,000	\$87,181	\$171,181
Department of Environmental Services	1991	\$296,050	\$296,824	\$592,874
Total		\$380,050	\$384,005	\$764,055
Rhode Island				
Department of Environmental Management	1992	\$200,000	\$232,237	\$432,237
Narragansett Bay Water Quality Mgt. Dist.	1991	\$300,000	\$300,000	\$600,000
Department of Environmental Management	1989	\$300,000	\$49,957	\$349,957
Total		\$800,000	\$582,194	\$1,382,194
Vermont				
Agency of Natural Resources	1993	\$80,000	\$80,000	\$160,000
Agency of Natural Resources	1991	\$300,000	\$300,000	\$600,000
Total		\$380,000	\$380,000	\$760,000
REGION 1 TOTAL		\$3,557,069	\$2,901,291	\$6,458,360

Funding Breakdown By Grant (Continued)

Organization	Year	Federal Funds	State Match	Total
Region 2				
New Jersey				
Dept. of Environmental Protection and Energy	1993	\$207,452	\$326,385	\$533,837
Institute of Technology	1991	\$300,000	\$300,000	\$600,000
Department of Environmental Protection	1990	\$325,492	\$34,069	\$359,561
NJ Hazardous Waste Facilities Siting Comm.	1989	\$300,000	\$40,000	\$340,000
Total		\$1,132,944	\$700,454	\$1,833,398
New York				
Department of Environmental Conservation	1993	\$222,276	\$277,724	\$500,000
Cornell University - Center for the Environment	1993	\$20,272	\$20,314	\$40,586
Cornell University	1990	\$300,000	\$33,334	\$333,334
Industrial Technology Assistance Corp.	1992	\$200,000	\$335,288	\$535,288
Western NY Economic Development Corp.	1990	\$300,000	\$35,165	\$335,165
Department of Environmental Conservation	1989	\$300,000	\$115,532	\$415,532
Total		\$1,342,548	\$817,357	\$2,159,905
REGION 2 TOTAL		\$2,475,492	\$1,517,811	\$3,993,303
Region 3				
Delaware				
Dept. of Natural Resources and Env. Control	1993	\$198,940	\$217,189	\$416,129
Dept. of Natural Resources and Env. Control	1990	\$346,095	\$123,282	\$469,377
Total		\$545,035	\$340,471	\$885,506
District of Columbia				
Environmental Regulation Administration	1993	\$47,110	\$47,138	\$94,248
Metro. Washington Council of Governments	1990	\$462,131	\$26,780	\$488,911
Total		\$509,241	\$73,918	\$583,159
Maryland				
Department of the Environment	1992	\$200,000	\$200,000	\$400,000
Total		\$200,000	\$200,000	\$400,000
Pennsylvania				
Department of Environmental Protection	1993	\$146,547	\$146,547	\$293,094
Center for Hazardous Materials Research	1990	\$320,000	\$100,000	\$420,000
Total		\$466,547	\$246,547	\$713,094
Virginia				
Department of Environmental Quality	1993	\$150,000	\$155,800	\$305,800
Department of Waste Management	1990	\$299,970	\$70,750	\$370,720
Total		\$449,970	\$226,550	\$676,520
West Virginia				
Department of Environmental Protection	1993	\$150,000	\$198,588	\$348,588
Division of Natural Resources	1990	\$291,689	\$44,771	\$336,460
Total		\$441,689	\$243,359	\$685,048
REGION 3 TOTAL		\$2,612,482	\$1,330,845	\$3,943,327

Funding Breakdown By Grant (Continued)

Organization	Year	Federal Funds	State Match	Total
Region 4				
Alabama				
Department of Environmental Management	1993	\$66,250	\$66,250	\$132,500
Department of Environmental Management	1991	\$165,000	\$165,000	\$330,000
Total		\$231,250	\$231,250	\$462,500
Florida				
Department of Environmental Regulation	1993	\$56,250	\$60,000	\$116,250
Department of Environmental Regulation	1991	\$300,000	\$429,842	\$729,842
Total		\$356,250	\$489,842	\$846,092
Georgia				
Hazardous Waste Management Authority	1993	\$56,250	\$56,250	\$112,500
Hazardous Waste Management Authority	1991	\$300,000	\$300,000	\$600,000
Department of Natural Resources	1990	\$270,000	\$30,000	\$300,000
Total		\$626,250	\$386,250	\$1,012,500
Kentucky				
Department of Environmental Protection	1993	\$56,250	\$56,250	\$112,500
Department of Environmental Protection	1989	\$300,000	\$33,333	\$333,333
Total		\$356,250	\$89,583	\$445,833
Mississippi				
Department of Environmental Quality	1993	\$56,250	\$966,372	\$1,022,622
Department of Natural Resources	1989	\$300,000	\$109,360	\$409,360
Total		\$356,250	\$1,075,732	\$1,431,982
North Carolina				
Dept. of Env., Health, and Nat. Resources	1993	\$56,250	\$56,250	\$112,500
Department of Nat. Resources & Comm. Dev.	1989	\$300,000	\$100,000	\$400,000
Total		\$356,250	\$156,250	\$512,500
South Carolina				
Dept. of Health and Environmental Control	1993	\$56,250	\$56,250	\$112,500
Dept. of Health and Environmental Control	1991	\$300,000	\$300,000	\$600,000
Total		\$356,250	\$356,250	\$712,500
Tennessee				
Department of Environment and Conservation	1993	\$61,250	\$61,368	\$122,618
Department of Health and Environment	1990	\$300,000	\$33,334	\$333,334
Total		\$361,250	\$94,702	\$455,952
REGION 4 TOTAL		\$3,000,000	\$2,879,859	\$5,879,859

Funding Breakdown By Grant (Continued)

Organization	Year	Federal Funds	State Match	Total
Region 5				
Illinois				
Hazardous Waste Research Information Research Center	1993	\$195,000	\$268,969	\$463,969
Environmental Protection Agency	1992	\$200,000	\$206,945	\$406,945
Environmental Protection Agency	1991	\$299,600	\$128,300	\$427,900
Total		\$694,600	\$604,214	\$1,298,814
Indiana				
Department of Environmental Management	1993	\$20,000	\$20,000	\$40,000
Purdue University	1990	\$300,000	\$33,333	\$333,333
Department of Environmental Management	1989	\$300,000	\$33,333	\$333,333
Total		\$620,000	\$86,666	\$706,666
Michigan				
Michigan State University	1990	\$250,359	\$28,030	\$278,389
Department of Education	1990	\$125,163	\$33,289	\$158,452
Department of Commerce and Resources	1991	\$100,000	\$11,000	\$111,000
Department of Natural Resources	1989	\$240,050	\$94,057	\$334,107
Total		\$715,572	\$166,376	\$881,948
Minnesota				
Office of Waste Management	1990	\$299,634	\$33,276	\$332,910
Total		\$299,634	\$33,276	\$332,910
Ohio				
Department of Development	1993	\$195,000	\$195,000	\$390,000
University of Cincinnati	1992	\$20,000	\$20,000	\$40,000
Total		\$215,000	\$215,000	\$430,000
Wisconsin				
University of Wisconsin-Madison	1993	\$40,000	\$49,500	\$89,500
Department of Natural Resources	1991	\$300,000	\$300,044	\$600,044
Total		\$340,000	\$349,544	\$689,544
REGION 5 TOTAL		\$2,884,806	1,455,076	\$4,339,882

Funding Breakdown By Grant (Continued)

Organization	Year	Federal Funds	State Match	Total
Region 6				
Arkansas				
Department of Pollution Control and Ecology	1991	\$229,944	\$229,944	\$459,888
Total		\$229,944	\$229,944	\$459,888
Indian Tribes/Other Organizations				
All Indian Pueblo Council	1993	\$65,000	\$65,000	\$130,000
All Indian Pueblo Council	1992	\$200,000	\$226,100	\$426,100
Total		\$265,000	\$291,100	\$556,100
Louisiana				
Department of Environmental Quality	1993	\$20,000	\$20,765	\$40,765
Department of Environmental Quality	1989	\$373,305	\$300,000	\$673,305
Total		\$393,305	\$320,765	\$714,070
New Mexico				
Environment Department	1993	\$58,022	\$58,023	\$116,045
Total		\$58,022	\$58,023	\$116,045
Oklahoma				
Department of Environmental Quality	1993	\$110,000	\$110,000	\$220,000
Department of Health	1990	\$300,000	\$33,334	\$333,334
Total		\$410,000	\$143,334	\$553,334
Texas				
Texas Water Commission	1993	\$107,378	\$107,378	\$214,756
Lower Colorado River Authority	1993	\$89,600	\$143,072	\$232,672
Texas Water Commission	1989	\$300,000	\$33,333	\$333,333
Total		\$496,978	\$283,783	\$780,761
REGION 6 TOTAL		\$1,853,249	\$1,326,949	\$3,180,198

Funding Breakdown By Grant (Continued)

Organization	Year	Federal Funds	State Match	Total
Region 7				
Iowa				
Iowa Waste Reduction Center - U. of N. Iowa	1993	\$24,378	\$24,378	\$48,756
Department of Natural Resources	1993	\$100,000	\$100,000	\$200,000
Iowa Waste Reduction Center	1990	\$300,000	\$67,655	\$367,655
Department of Natural Resources	1990	\$300,000	\$33,334	\$333,334
Total		\$724,378	\$225,367	\$949,745
Kansas				
Department of Health and Environment	1991	\$300,000	\$331,919	\$631,919
Total		\$300,000	\$331,919	\$631,919
Missouri				
University of Missouri	1993	\$24,689	\$24,689	\$49,378
Department of Natural Resources	1991	\$300,000	\$33,334	\$333,334
Total		\$324,689	\$58,023	\$382,712
Nebraska				
Department of Environmental Quality	1993	\$300,000	\$300,000	\$600,000
University of Nebraska, Lincoln	1990	\$375,030	\$112,520	\$487,550
Total		\$675,030	\$412,520	\$1,087,550
REGION 7 TOTAL		\$2,024,297	\$1,027,829	\$3,051,926
Region 8				
Colorado				
Department of Health	1993	\$125,000	\$125,000	\$250,000
Department of Health	1992	\$172,985	\$172,985	\$345,970
Department of Health	1990	\$299,460	\$120,964	\$420,424
Total		\$597,445	\$418,949	\$1,016,394
Montana				
Montana State University	1993	\$90,000	\$90,000	\$180,000
Montana State University	1992	\$200,000	\$200,000	\$400,000
Total		\$290,000	\$290,000	\$580,000
South Dakota				
Dept. of Environment and Natural Resources	1993	\$112,500	\$112,500	\$225,000
Dept. of Environment and Natural Resources	1992	\$123,109	\$123,438	\$246,547
Total		\$235,609	\$235,938	\$471,547
Utah				
Department of Environmental Quality	1993	\$122,500	\$122,500	\$245,000
Department of Environmental Quality	1991	\$299,711	\$314,418	\$614,129
Total		\$422,211	\$436,918	\$859,129
Wyoming				
State of Wyoming	1992	\$200,000	\$200,000	\$400,000
Total		\$200,000	\$200,000	\$400,000
REGION 8 TOTAL		\$1,745,265	\$1,581,805	\$3,327,070

Funding Breakdown By Grant (Continued)

Organization	Year	Federal Funds	State Match	Total
Region 9				
Arizona				
Department of Environmental Quality	1992	\$200,000	\$200,000	\$400,000
Total		\$200,000	\$200,000	\$400,000
California				
Trade and Commerce Agency	1993	\$204,210	\$204,210	\$408,420
Department of Health Services	1990	\$300,000	\$33,333	\$333,333
Total		\$504,210	\$237,543	\$741,753
Hawaii				
Department of Health	1992	\$185,316	\$187,212	\$372,528
Total		\$185,316	\$187,212	\$372,528
Nevada				
University of Nevada, Reno	1991	\$299,888	\$299,888	\$599,776
Total		\$299,888	\$299,888	\$599,776
Region 9 Territories				
American Samoa EPA	1993	\$50,000		\$50,000
Navajo EPA	1993	\$182,290	\$224,500	\$406,790
N. Mariana Islands Dept. of Public Health	1993	\$13,300	\$6,650	\$19,950
American Samoa EPA	1990	\$177,165		\$177,165
Total		\$422,755	\$231,150	\$653,905
REGION 9 TOTAL		\$1,612,169	\$1,155,793	\$2,767,962
Region 10				
Alaska				
Department of Environmental Conservation	1993	\$21,120	\$21,120	\$42,240
Office of the Governor	1991	\$270,000	\$270,000	\$540,000
Department of Environmental Protection	1991	\$197,000	\$33,000	\$230,000
Total		\$488,120	\$324,120	\$812,240
Idaho				
Department of Health and Welfare	1989	\$202,500	\$22,500	\$225,000
Total		\$202,500	\$22,500	\$225,000
Indian Tribes/Other Organizations				
Chugachmiut Tribe	1993	\$21,594	\$22,500	\$44,094
Jamestown S'Klallam Tribe	1993	\$193,826	\$10,201	\$204,027
Kwetthluk I.R.A. Council	1993	\$30,000	\$30,000	\$60,000
Shoshone-Bannock Tribe	1993	\$27,500	\$32,000	\$59,500
Swinomish Indian Tribal Community	1993	\$24,125	\$24,125	\$48,250
Total		\$297,045	\$118,826	\$415,871
Oregon				
Department of Environmental Quality	1993	\$261,198	\$261,198	\$522,396
Department of Environmental Quality	1991	\$300,418	\$300,000	\$600,418
Total		\$561,616	\$561,198	\$1,122,814
Washington				
Department of Ecology	1993	\$200,000	\$200,000	\$400,000
Department of Ecology	1992	\$200,000	\$200,000	\$400,000
Department of Ecology	1990	\$297,000	\$33,000	\$330,000
Total		\$697,000	\$433,000	\$1,130,000
REGION 10 TOTAL		\$2,246,281	\$1,459,644	\$3,705,925
NATIONWIDE TOTALS		\$24,010,910	\$16,636,902	\$40,647,812

D. Groups Targeted by PPIS Grantees

Targeted Industry Sectors		
Targeted Industries	Number of Grants	Percent of Total
Automotive industry (includes auto body repair and vehicle maintenance)	24	21
Printing	24	21
Dry cleaners	17	15
Metal manufacturing	15	13
Agriculture	13	11
Painting	13	11
Electroplating	12	10
Solvents users	11	10
Metal plating	10	9
Chemical production	11	10
Food processing	6	5
Refineries	5	4
Electronics	5	4
Photography	5	4
Air conditioning/CFCs	5	4
Utilities	4	4
Furniture	4	4
Textiles	4	4
Health care	3	3
Pulp and paper	3	3
Pesticide applicators	3	3
Glue manufacturing	3	3
Pharmaceutical	3	3
Jewelry	2	2
Machine shops	2	2
Transportation	2	2

Groups Targeted by PPIS Grantees (Continued)

Targeted Industry Sectors (Cont.)		
Targeted Industries	Number of Grants	Percent of Total
Surface coaters	2	2
Plastic manufacturing	2	2
Wood products	2	2
Lithographers	1	1
Beauty parlor	1	1
Silver	1	1
Underwater equipment	1	1
Mining	1	1
Roofing	1	1

Targeted (Non-Industrial) Groups		
Targeted Group	Number of Grants	Percent of Total
Environmental regulators	22	19
Teachers/students	16	14
Universities	11	10
Environmental groups	9	8
Trade associations	9	8
Local governments	7	4
Publicly Owned Treatment Works (POTWs)	6	5
Indian Tribes	4	4

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