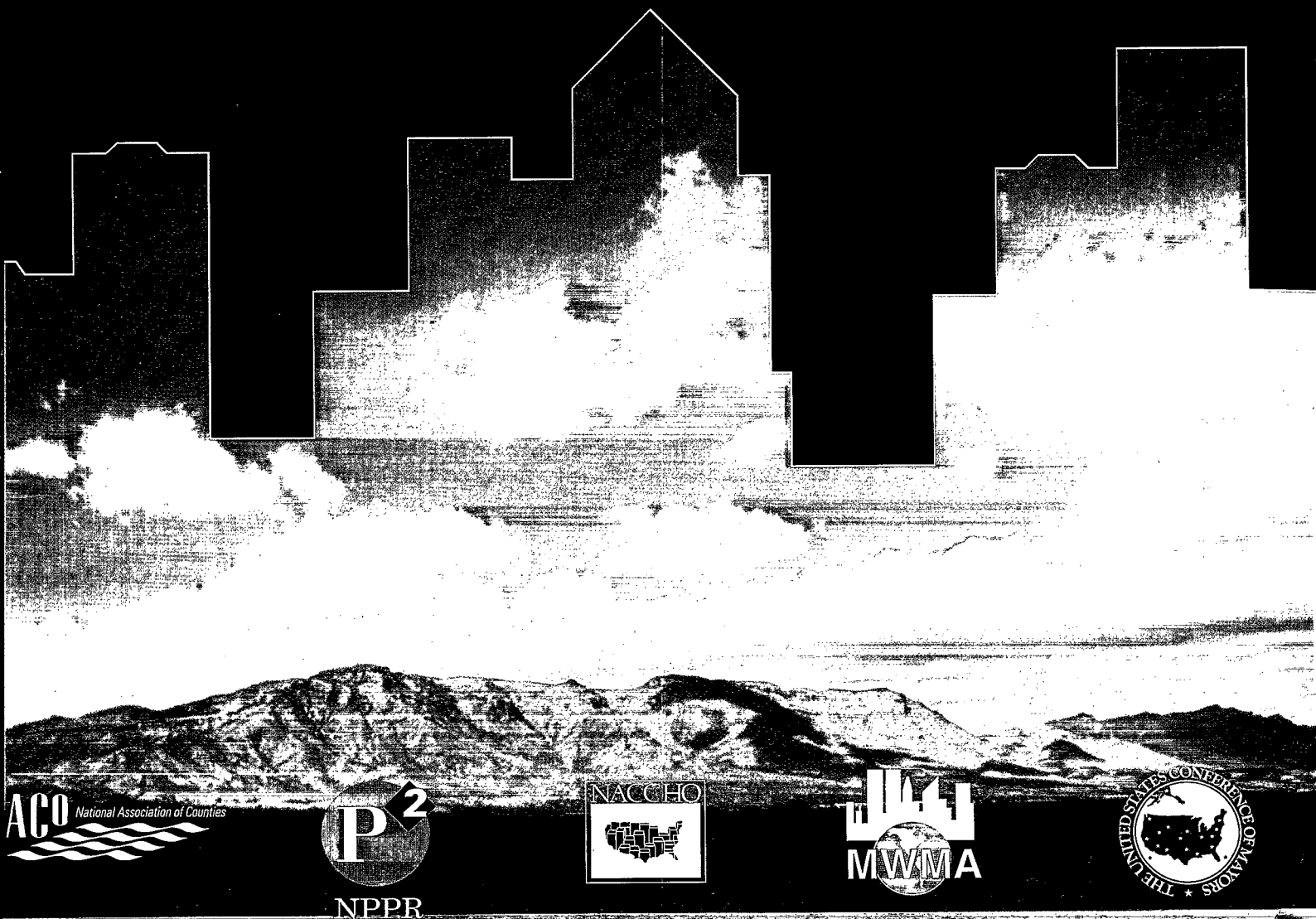


# PREVENTING POLLUTION

**in our Cities and Counties**

**A Compendium of Case Studies**



## About the Organizations

### The National Association of County and City Health Officials (NACCHO)

The National Association of County and City Health Officials (NACCHO) is a non-profit membership organization serving all 3,000 local health departments nationwide—in cities, counties, townships, and districts. NACCHO provides education, information, research, and technical assistance to local health departments; and facilitates partnerships among local, state, and federal agencies, in order to promote and strengthen public health.



### The National Pollution Prevention Roundtable

The National Pollution Prevention Roundtable is the largest membership organization dedicated solely to pollution prevention. The Roundtable provides a national forum for promoting the development, implementation, and evaluation of efforts to avoid, eliminate, or reduce pollution at the source. The Roundtable membership is comprised of representatives from the federal, state, and local government sectors, university based P2 programs, non-governmental organizations, and private industry.



National Roundtable

### The United States Conference of Mayors

The United States Conference of Mayors is a national association of city governments, each represented by its chief elected official, the Mayor. Through the Conference, the nation's larger cities, with populations of 30,000 or more, share experiences and cooperate to meet the challenges of urban leadership.



### National Association of Counties (NACo)

NACo is the only national organization that represents county governments. Established in 1935, NACo's goals are to improve county government, act as a liaison with other levels of government, present the county position on national issues, and assist counties in helping their citizens achieve a better quality of life.



### Municipal Waste Management Association (MWMA)

The Municipal Waste Management Association (MWMA) is a national member association affiliated with The U.S. Conference of Mayors. The MWMA brings together local governments and other organizations with a common interest in the management of solid waste through reduction, recovery, reuse and recycling of materials and energy from the waste stream.



The authors give permission for this publication, or portions of this publication, to be reproduced provided that the above organizations are acknowledged.

Fall 1995

## Acknowledgments

The National Association of Counties (NACo), the United States Conference of Mayors and its affiliate The Municipal Waste Management Association (USCM/MWMA), the National Association of County and City Health Officials (NACCHO), and the National Pollution Prevention Roundtable (National Roundtable) are pleased to have collaborated in this effort to document successful examples of local pollution prevention activities. This publication was made possible with funding from the U.S. Environmental Protection Agency's (EPA) Pollution Prevention Division (PPD) and Office of Research and Development (ORD). We especially thank our project officers, **Julie Shannon** (PPD), **Lena Hann-Ferris** (PPD), and **Lawrence Martin** (ORD).

For their comments, technical reviews, and tireless assistance, we would like to thank the following members of the National Roundtable's Local Government Work Group: **Tony Eulo**, Western Center for Pollution Prevention; **Jancie Hatcher**, Georgia Pollution Prevention Assistance Division; **Tom Hersey**, Pollution Prevention Program Coordinator, Erie County, NY; **Andrew Murray**, Local Government Commission; **Linda Giannelli Pratt**, Pollution Prevention Program Manager, San Diego County; **J. Bruce Suits**, Pollution Prevention Program Manager, City of Cincinnati; **Rick Yoder**, Environmental Engineer, Environmental Health Division, Lincoln-Lancaster County, NE; the NACCHO Environmental Health Advisory Committee, particularly: **Graham Dameron**, MPH, Director, Johnson County Health Department, IA; **Grace Eddison**, MD, Former Director, Gateway District Health Department, KY; **Scott E. Holmes**, M.S., Chief of the Environmental Health Division, Lincoln-Lancaster County, NE; **Tim McDonald**, MPH, Director, Island County Health Department, WA; **Ken Pearce**, MPH, Health Commissioner, Lorain County, OH; **Chris Wiant**, PhD, Deputy Director and Director of Environmental Health, Tri-County Health Department, Colorado; and **Susan Zepeda**, PhD, Health Agency Director, San Luis Obispo County, CA; and the NACo/USCM/MWMA Technical Review Group, particularly: **Steve Brachman**, Pollution Prevention Specialist, University of Wisconsin-Extension; **Kay Gervasi**,

Pollution Prevention Manager, Broward County, FL; and **Frank Sudol**, Chief of Research and Program Development, Newark, NJ.

We would also like to thank the staff of the individual counties and local governments featured in this report who described and documented their programs so thoroughly.

This report was compiled by the following individuals: **Naomi Friedman** and **David George** (NACo); **Judy Sheahan** (USCM/MWMA); **Ann Saurman** (NACCHO); and **Warren Weinstein** (National Pollution Prevention Roundtable). Special thanks to **Jill Conley** for her valuable editorial assistance, and **Richard Westbrook** for cover design and layout.

We all hope that this compendium can be used as a tool to encourage and facilitate the free exchange of ideas and processes and assist other local governments in the development of their pollution prevention programs. For any questions concerning a specific case study, please contact the community directly or the organization listed next to the community.

Austin	NACo
Broward County	NACo
Cincinnati	USCM/MWMA
Dade County	National Roundtable
Erie County	National Roundtable
King County	NACo
Lincoln/Lancaster	NACCHO
Milwaukee	USCM/MWMA
Newark	USCM/MWMA
Phoenix	National Roundtable
Olmsted County	NACo
Rock County	NACo
Rowan County	NACCHO
San Diego County	NACCHO
San Francisco	USCM/MWMA
Santa Clara County	National Roundtable
St. Clair County	NACCHO
Thurston County	NACCHO
Washtenaw County	NACo

# Pollution Prevention

Page	POPULATION		AGENCY	P2 BUDGET	ANNUAL MSW	HAZ. MATS.	WATER	AIR
Austin, TX	7	460,000	Environmental & Conservation Services Department	\$259,000	•	•	•	
Broward Co., FL	10	1.4 million	Dept. of Natural Resource Protection	\$167,000		•	•	
Cincinnati, OH	15	364,278	Office of Environmental Mgmt.	\$102,400	•	•	•	•
Dade Co., FL	18	2 million +	Department of Environmental Resources Management	\$100,000	•	•	•	
Erie Co., NY	22	1 million	Environmental Compliance Div.	\$150,000		•		•
King Co Seattle, WA	25	1.6 million	Local Hazardous Waste Mngmt Prog. (collaboration of many agencies)	See Study		•		
Lincoln/ Lancaster Co., NE	29	220,000	Health Dept.	\$530,000		•	•	•
Milwaukee, WI	33	632,000	Dept. of Public Works	N/A	•	•		•
Newark, NJ	36	275,000	Dept. of Engineering	See Study	•	•	•	
Olmstead Co., MN	39	110,000	Public Works Dept.	See Study	•	•		•
Phoenix, AZ	42	1 million	Water Services Dept.	\$210,000		•	•	
Rock Co., WI	46	142,000	U. of Wisconsin Extension	See Study		•		
Rowan Co., KY	51	20,000	Health Dept.	\$85,000	•		•	
San Diego Co., CA	54	2.6 million	Dept. Environmental Health	\$15,000-50,000		•	•	•
San Francisco, CA (city/county)	57	750,000	Office of Chief Admin Officer & Dept. of Public Works	\$468,211 2 projects	•	•	•	
Santa Clara Co., CA	62	1.7 million	Env. Mgmt. Agency	\$270,000	•	•	•	•
St. Clair Co., IL	65	262,852	Health Dept.	\$50,000	•	•		
Thurston Co., WA	69	185,900	Health Dept.	\$550,000		•		
Washtenaw Co., MI	74	283,000	Dept. Env. & Infrastructure	\$135,000- 200,000	•	•	•	•

# Case Studies

MULTI-MEDIA	ENERGY	ASSESSMENTS	ON-SITE	BUSINESSES TO SMALL OUTREACH	EDUCATION CONSUMER PRACTICES	INTERNAL BUDGS	FLEETS
•	•			Building industry		•	•
		•		Marinas, Boating, Metal Finishing, Auto salvage		•	•
•		•			•	•	
		•			•	•	•
•		•				•	
•		•		Dry cleaners, Auto body, Automotive, Dentists, Printers	•		
•		•			•		
	•			Small quantity generators	•	•	•
	•				•	•	•
		•				•	
		•		Dentists, Electroplators & Chemical companies	•		
		•		Manufacturing companies			
		•			•		
•		•			•		
		•		Small quantity generators	•	•	
•							
		•		Automotive, Construction, Landscaping, Janitorial	•		
		•		Those that use, store or manufacture haz. mats. >56 gals		•	

\* This matrix indexes the case studies based on select criteria in order to assist readers in identifying activities most relevant to their circumstances. Please note that this matrix does not necessarily reflect all the P2 activities occurring in the jurisdiction, but rather only those highlighted in the written case studies.

## KEY

**N/A** = Not Available  
**Agency** = Lead agency conducting P2 work  
**Annual P2 Budget** = Expenditures spent on pollution prevention activities. Please see case studies' section "Resources Used" for further detail.  
**MSW** = Municipal solid waste source reduction and reuse activities  
**Haz. Mats** = Hazardous materials and waste reduction  
**Water** = Water protection, conservation, and wastewater treatment activities  
**Air** = Air pollution reduction activities  
**Multi-media** = Program that focuses holistically on all waste and pollution components to the air, water, and land.  
**Energy** = Energy conservation  
**On-site Assessment** = Performs on-site P2 assessment/audits of local plants/facilities  
**Consumer Education** = Outreach to citizens on consumer decisions  
**Outreach to Small Businesses** = Program provides P2 information and/or technical assistance to smaller companies (company types listed where available)  
**Internal Practices** = Implements P2 activities in internal county and municipal facilities and operations.  
**Bldgs** = Implements P2 practices in building construction and operation  
**Fleets** = Integrates P2 activities in the operation of municipal and county fleets

## Introduction

Pollution prevention, also known as source reduction, is any practice that eliminates or reduces pollution at its source (according to the 1990 federal Pollution Prevention Act). We prevent pollution when we utilize raw materials, energy, water, and other resources more efficiently, substitute benign substances for hazardous ones, and remove toxic substances from the production process. By minimizing the use and production of hazardous substances, we protect human health, strengthen our economic well-being, and preserve the environment.

The purpose of this compendium is to highlight pollution prevention (P2) activities of city and county governments throughout the country. Local government efforts to stimulate pollution prevention in the community often go unrecognized. It is our hope that cities and counties that have successfully integrated source reduction programs into their agency activities can become models for others to emulate.

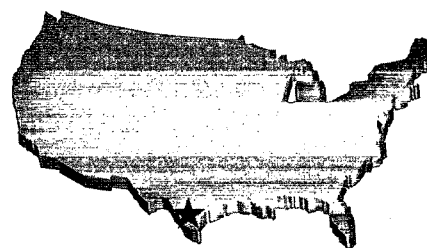
The 19 cases contained in this document include a diverse array of pollution prevention programs from government agencies of all sizes, districts of varying population densities, and programs in all stages of development. Although some of these examples focus on reducing pollution to a single medium such as air, water, or land, many of these programs focus on reducing waste to all environmental media.

Although our intent for this publication was to include only examples of pollution prevention, some sections of certain case studies deal with recycling, reuse or other forms of solid waste management which are considered pollution control, not pollution prevention. While it is important to stress that source reduction is certainly the best solution, we also wanted to recognize the additional efforts cities and communities are making to protect the environment and promote public health.

The communities featured in this compendium have incorporated pollution prevention practices into a broad range of areas including: wastewater pretreatment and septic tank programs, watershed and groundwater protection programs, educational activities targeted at residents, technical assistance and compliance assistance to local businesses and industries, partnership activities between government agencies, and in-house practices of municipal and county facilities. Each of these case studies includes a short summary, a description of the program, information about costs, financing, and staffing resources, outcomes, lessons learned, and information about available P2 materials. The matrix on the previous page further describes the individual characteristics of these programs.

We are very interested in receiving your feedback about this publication. Please contact Naomi Friedman at NACo (202/942-4262), Ann Saurman at NACCHO (202/783-5550), Judy Sheahan at the Conference of Mayors (202/293-7330), or Warren Weinstein at the National Roundtable (202/466-P2P2) with any questions or comments.

# Austin, Texas



## Summary

While the City of Austin has a number of pollution prevention activities, this case study focuses specifically on the Green Builder Program. Through this marketing program, the city encourages construction of residential buildings that foster efficient use of resources, prevent pollution, and reduce waste. Green building guidelines have also been developed for all city facilities.

## Program Description

### Impetus for Pollution Prevention Activity

Several citizens and staff members of Environmental and Conservation Services Department (ECSD) were concerned about the environmental impacts associated with development activities both in the local area as well as nationally and internationally. Controversy over the effects of construction in ecologically sensitive areas had polarized the community. The Green Builder Program was initiated in January 1992 with the goal of harnessing market forces to foster reduced environmental effects of buildings and new construction. The program seeks to transform construction practices to ones that are more environmentally sustainable as well as healthier to inhabitants.

Austin's Green Builder Program seeks to influence the residential building sector on a range of building

## Demographics

### Jurisdiction:

Austin, Texas

### Population:

460,000

### Type:

Urban

### Contact:

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Coordinator, Green Builder Program  
City of Austin Environmental and  
Conservation Services Department  
206 E. 9th St., Suite 17.102  
Austin, TX 78701  
Phone: 512/499-3504  
Fax: 512/499-2859

### Overall Annual Budget of City:

\$1.2 billion

### Lead Agency Conducting Pollution Prevention Work:

Environmental and Conservation  
Services Department (ECSD)

impacts. The program initially chose four resource categories for which to develop guidelines: water, energy, building materials, and solid waste. While the program was originally designed to address new residential construction, it now offers guidelines for commercial buildings. Currently, sustainable building guidelines have also been developed for all city facilities, including libraries, fire stations, waste transfer stations, low-income housing, and the new municipal airport.

Guidelines for city construction are administered by the Department of Public Works and Transportation. Design teams who direct work for the city must follow the guidelines to the maximum extent practicable. Projects that are budgeted for dates after March 1995, must include additional funding to accomplish sustainable building elements, with a range of increased construction costs from 5 to 25 percent. Additional case studies are needed to determine exact increases in construction costs.

## Strategy

The Green Builder Program certifies green homes on the basis of a scale of one to four stars —each star represents a higher level of green features and systems. This rating system was developed based on the following criteria:

- identification of the key resource issues encompassed by new residential buildings;
- determination of the evaluative criteria for considering environmentally-friendly options;

## Austin, Texas

- development of a model to measure the impact of different options;
- translation of the model into a simplified presentation and rating system for general use.

A systems flow model was designed to track the resource issues (e.g., water, energy, materials, and waste) through interactive matrices in the areas of sourcing, processing, using, and disposing/recycling. This model served as the basis for the rating system which allows for comparative analysis of different building options and approaches.

Program staff also developed criteria to quantify the relative "sustainability value" of listed options and their ability to:

- optimize the use of site resources in a non-destructive manner;
- conserve resources;
- encourage recycling and the use of recycled materials;
- stimulate the regional economy;
- minimize embodied energy (use energy resources frugally) and negative environmental effects;
- stimulate natural processes; and
- minimize health threats to building occupants.

The program enrolls building professionals who

agree to offer their customers a range of options and approaches that are presented in program guidelines according to the interests of their customers and other practical considerations. Building professionals (builders, architects, engineers, trades persons) receive technical and logistical assistance from the city as well as marketing assistance in exchange for offering green products and services. The public and building professionals are educated about the issues and values associated with green building through seminars, conferences, media advertising, written materials, demonstration projects, and guest presentations. Program participants receive recognition from the city through a general marketing campaign.

The table, at the bottom of the page, describes some of the Green Building options organized by resource area.

One noteworthy initiative of the Green Building Program is the "Green Habitat Learning Project," a demonstration green, low-cost house built for a low-income family. For this project, the Green Builder Program partnered with Habitat for Humanity and the American Institute for Learning (AIL). Habitat provided the land and family, while the AIL's Casa Verde Program provided the construction of the building using at-risk youth as the builders. The project features waste reducing strategies and features, resource conserving

### Austin's Green Building Options

WATER	ENERGY	MATERIALS	WASTE
Harvested rainwater system	Rating from the Energy Star Home Rating Program	Wood from certified sustainably managed forests	Compost system
Low-flow showerheads	Passive heating and cooling design	Concrete with fly ash	Built-in kitchen recycling center
Low-flush toilets	Continuous ridge and soffit venting	Indigenous stone and brick	Hazardous material safety storage system
Composting toilets	Thermal chimney	Non-toxic termite protection	Builder recycles construction waste
Greywater irrigation	Solar water heating	Gypsum/cellulose wall-board (recycled material)	
Xeriscape (native, low water requirement) landscape	Proper tree planting for shade	Natural paints and sealers	
Pervious materials for walkways and driveways	Efficient lighting	Recycled doors	
	Daylighting	Cotton insulation	
	Photovoltaic system		



materials, energy and water systems, and safe indoor air quality. The project received attention and support from businesses, citizens, and politicians. The Casa Verde Program expanded as a result of this experience and is now building 12 green low-cost homes for the city, offering employment and training to 64 disadvantaged youth.

When compared to five other Habitat for Humanity homes of comparable size, the Green Builder Program house used 50 percent less electricity over the same five-month period.

## Resources Used

### Staffing Resources

The Program currently has a six-person staff with administrative, management, technical, marketing, and research functions. Prior to FY94 the program was staffed by three persons and, prior to FY92, one person.

### Expenditures and Funding Sources

The FY94 budget was \$259,000.

Three one-year grants paid for the initial staff person. Electric utility funds have subsequently underwritten the program. (The program was developed within the Energy Division of ECSD which operates demand side management programs for the utility.)

New staff, including a commercial energy technician and Heating, Ventilation, and Air Conditioning (HVAC) technician, joined the program through reassignment.

The city has some initial data on the cost of Green Builder Program units in comparison to similar, non-green units. Volume builders building in the \$125,000-\$200,000 range have calculated an increase for Level I Certification as \$400 per unit including existing rebates for energy efficiency. At Level II (the next level of green certification), the increased cost to the builders is \$750, including rebates. Level III custom homes generally cost the same as non-green custom homes. A 92-unit affordable housing project is achieving a Level III ranking of its homes. The highest priced home is \$74,000 with three bedrooms, 2 baths, and an attached two-car garage. The city is continuing to collect information on costs.

### Written Materials and Technical Assistance Sources Used

In designing the Green Builder Program, the city relied on a variety of information sources. Those

sources include: EPA research reports; state materials; material from non-profit organizations, such as the Center for Resourceful Building Technology; the Canadian Housing and Mortgage Corporation; and the Canadian Standards Association.

## Outcome and Accomplishments

### Assessment of Effectiveness

The number of buildings that are constructed using techniques recommended by the program is a key indicator of the program's success. More than 200 units are expected to be built using program guidelines in 1995 — a dramatic increase over the previous year. Attendance at program sponsored events and membership in the program are other indicators of its effectiveness. A recent annual Green Building Conference drew 1,500 attendees (up from 300) and program membership exceeds 100 members and is increasing steadily.

### Community and Department Gains

Community gains can be measured in energy and water savings to end-users as well as in the positive public response the City has received as a result of this program. Awards from the United Nations at the Earth Summit, Public Technology Inc., Demand Side Management Association, and Renew America have also engendered increased interest and commitment in the program.

### Lessons Learned

Market-based initiatives such as the Green Builder Program can be successful in fostering change in a non-controversial manner. Integrating the program's environmental agenda with social and economic issues has been important in gaining support and is recommended as a key strategy for others.

### Pollution Prevention Materials Available From Jurisdiction

*Sustainable Building Sourcebook*

Green Builder Program Residential Information Flyer

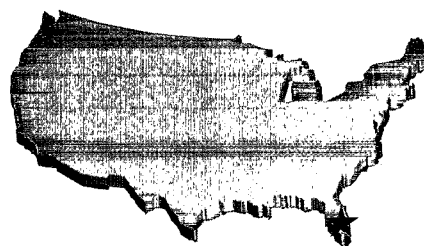
City of Austin Sustainable Building Guidelines

Green Builder Program Conference Paper

*Sustainable Systems Rating Program* and *Green Habitat*

*Learning Project* are available from Public Technology Inc., Washington, DC.

# Broward County, Florida



## Summary

Broward County, through the Department of Natural Resource Protection's Pollution Prevention and Control Section, has implemented a new non-regulatory approach to pollution prevention. This multi-pronged program focuses its pollution prevention efforts on both the business community and county facilities. The outcome has been greater protection of drinking water sources, improved regulatory compliance, and increased collaboration between businesses and the Department of Natural Resource Protection.

## Program Description

### Impetus for Pollution Prevention Activity

The Broward County Department of Natural Resource Protection (DNRP) sought to establish a better relationship with the regulated community while improving the environment. Over the years, the agency's role as regulator had created an adversarial relationship with the business community and the general public. In addition, Broward County's formidable water pollution and dead fish problems negatively affected their recreational boating and tourism industries. The Pollution Prevention (P2) section of DNRP was created as a non-regulatory entity with the mission

## Demographics

### Jurisdiction:

Broward County, Florida

### Population:

1.4 million

### Type:

Urban

### Contact:

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Program Manager  
Broward County Department of Natural  
Resource Protection  
218 SW 1st Ave,  
Fort Lauderdale, FL 33301  
Phone: 305/519-1257  
Fax 305/765-4804

### Overall Annual Budget of County:

\$1.4 billion

### Lead Agency Conducting Pollution Prevention Work:

Pollution Prevention Section  
Pollution Prevention and Remediation  
Programs Division  
Broward County Department of Natural  
Resource Protection

of encouraging businesses to operate more efficiently, more easily comply with regulations, and prevent pollution at the source. DNRP wanted to move away from a regulatory approach and toward more voluntary cooperation with industry. The agency was convinced that pollution prevention would succeed because it makes sense.

The P2 Section was established in 1992 when a new division director, Kevin M. Burger, joined the agency. Mr. Burger reorganized the Hazardous Material and Solid Waste Division and renamed it Pollution Prevention and Remediation Programs Division (PPRP). During the reorganization, P2 Section was created. Three full-time staff positions were assigned to pollution prevention duties. No new staff was hired and no new regulations were promulgated to create this program.

DNRP is committed to excellence and leadership in implementing the pollution prevention concept into the agency's mainstream activities, such as inspections, permitting, and enforcement.

The following goals and objectives were set by the P2 Section in an attempt to accom-

plish environmental protection through voluntary pollution prevention and increased regulatory compliance:

1. Develop and implement a county-wide pollution prevention program, including recommendations for regulatory changes.

## Broward County, Florida

2. Develop a technical support program for businesses that use hazardous materials and/or create hazardous wastes;

- prepare best management practices for industrial/commercial categories identified as significant sources of pollutants in Broward County;
- provide technical assistance to the regulated community, government, and private business regarding source reduction and waste minimization, including waste reduction assessments, improved operating practices, material and product substitution, technology and process modification, re-use, recycling, treatment, and appropriate disposal as the last resort, especially for hazardous wastes.

3. Develop educational programs, such as:

- holding pollution prevention workshops on a variety of topics;
- preparing technical bulletins, concise fact sheets, and brochures on Broward County environmental regulations and pollution prevention topics;
- providing technical information on the use of alternative materials, processes and/or waste reduction practices;
- creating videos, slide presentations, and a newsletter;
- providing presentations on pollution prevention issues for trade associations, schools, and the public.

4. Develop economic incentives to increase pollution prevention activities in Broward County, such as:

- developing positive incentives for voluntary participation in the Broward County DNRP Pollution Prevention Program;
- using pollution prevention issues in settlement agreements.

5. Foster a solid working relationship between the regulated community and DNRP.

### Strategy

The P2 Section's program approaches pollution prevention from two angles. Initially, the P2 Section was created to work exclusively with regulated business and the industrial community. The P2 Section then decided that Broward County should set an example by examining pollution prevention opportunities in county buildings and operations. This led to the creation of the Pollution Prevention in County Operations (P2CO) program.

### *Creation of the Pollution Prevention in County Operations (P2CO) Program*

The P2CO program was created to conduct a detailed evaluation of waste generating, handling, and disposal practices for all county departments, offices and divisions, as well as to identify recommendations to improve practices in these areas.

The program was staged in three phases. The first phase involved a survey of each county facility using hazardous materials. Inspections were then conducted to determine regulatory compliance and hazardous material handling practices. Forty-four county facilities were inspected. A memo was sent to each facility manager responsible for environmental compliance, detailing recommendations for improvements which would bring each facility into compliance.

Currently underway, the second phase of the project will generate a summary report on waste management practices within Broward County government which will include recommendations for improvement. Waste management information includes an analysis of purchasing and waste disposal practices.

The third phase will be the implementation of a county government-wide waste reduction and pollution prevention program. Booklets for each facility type will be created and informal training classes for various facility-types will be conducted on an on-going basis. Each booklet will contain a summary of regulatory information and specific pollution prevention recommendations. Pollution prevention recommendations will include hazardous material substitution, process modification, and employee training.

### *Pollution Prevention and Best Management Practices (P2-BMP)*

The initial focus and purpose of the P2 Section was a collaborative approach to regulatory compliance and pollution prevention in the regulated community. The Pollution Prevention and Best Management Practices (P2-BMP) manual is an effort to accomplish just that. P2-BMPs are under development for industrial/commercial categories of business that have been identified as pollution risks. To date, two have been completed and one more is being developed. The P2-BMP is meant to serve as a tool to facilitate compliance with applicable environmental regulations, to minimize wastes, and to foster a pollution prevention attitude within the regulated community. The agency has plans for continued creation of P2-BMPs for industries throughout Broward County.

### *Marine Facilities P2-BMP*

The first P2-BMP was created in 1992 for marine facilities. Historically, boat repair and maintenance activities at marine facilities in Broward County have been conducted outdoors on the waterfront. In many cases, these practices have contributed to the discharge of wastes and contaminants to the surface and ground waters of Broward County resulting in subsequent environmental impacts.

The program began with the formation of a DNRP technical team charged with assessing the environmental impacts resulting from marine industry practices and reviewing marina operational practices. This team worked closely with industry representatives to develop specific requirements and goals to be incorporated into everyday operational practices at all marinas.

Working cooperatively with industry representatives, DNRP incorporated their input and concerns into a final document and agreed to an implementation schedule to enhance compliance with all relevant provisions of Broward County Environmental Code (Chapter 27). This process was facilitated by conducting workshops and by initiating open discussion and communication regarding the concerns of all parties affected by the P2-BMP.

As a result of this initiative, DNRP has managed to facilitate environmental regulation compliance, enhance waste minimization practices, and foster a "pollution prevention" attitude throughout the marine industry of Broward County. Boatyard employees, independent contractors, and customers are now more educated about the critical role pollution prevention practices and the P2-BMP plays in protecting the natural resources of the county. All marinas that meet the criteria for participation in the P2-BMP are required by DNRP to operate in accordance with these practices.

### *Metal Finishing Facilities P2-BMP*

The second P2-BMP was designed for metal finishing facilities. This P2-BMP was developed in cooperation with the metal finishing industries of Broward County to ensure that it accomplishes the department's objectives and can be implemented free of any undue technological or economic burdens. Four workshops were conducted between January and July, 1994. At these workshops, draft P2-BMPs were distributed and comments were solicited from the industry. The industry's hands-on involvement and active participation in the development process aided the formulation of a P2-BMP that serves the needs and expectations of all affected parties.

At a July 14, 1994 workshop, the final draft of the P2-BMP was unanimously approved for implementation by DNRP and representatives of the electroplating facilities, metal finishing industries, electronic companies, the South Florida Manufacturers Association, consulting firms, and the Florida Department of Environmental Protection (DEP) Waste Reduction Assistance Program.

The P2-BMPs promote the use of good housekeeping measures and the development of a preventive maintenance programs, employee pollution prevention training programs, and other pollution prevention techniques. Since the most appropriate method of preventing pollution can depend on site-specific considerations, the P2-BMPs have been developed to be a flexible tool for identifying source reduction obligations and matching them to the needs and capabilities of each individual facility. This built-in flexibility enables selection and implementation of the most cost-effective pollution prevention options for each facility.

### *Automobile Salvage Yards*

The third P2-BMP targets salvage yard operations and is in the process of being developed. As with the Marina P2-BMP, a review of salvage yards operations was conducted to determine current status of regulatory compliance and waste minimization practices. A summary of findings and a draft P2-BMP document were prepared. Salvage facility operators in Broward County were invited to several meetings to discuss the P2-BMP effort, the P2-BMP document, regulatory requirements, and pollution prevention opportunities.

The Salvage Facilities P2-BMP document has three sections. The first section provides an overview of all the governmental regulatory requirements that may apply to salvage facilities. The second section describes best management practices that are recommended for facilities to minimize the release of hazardous materials to the environment. The third, and final, section provides the basic information salvage yard operators will need to prepare a facility pollution prevention plan. Such a plan describes the actions to be taken at a facility to minimize releases of hazardous materials and wastes generated, provides a schedule for implementation, and describes a method for measuring progress towards reaching pollution prevention goals. So far, participating salvage yard operators have been very supportive of the P2-BMP process.

### Resources Used

#### Staffing Resources

A staff of three—the Pollution Prevention Program Manager, an Engineer II, and a Public Education Coordinator—within the P2 Section work full-time on pollution prevention activities in Broward County. These three positions do not represent newly created jobs, but were established through the 1992 reorganization. Knowledgeable DNRP staff were simply reassigned to the P2 section. They perform non-regulatory, confidential site visits to regulated facilities to provide the specific technical support described above, maintain the P2 library which is updated regularly, develop P2-BMPs, create technical bulletins, fact sheets, and brochures aimed at pollution prevention, and conduct workshops for the regulated community and general public.

#### Expenditure and Funding Sources

Funding comes from the general fund, that is, ad valorem taxes. However, DNRP as a whole is 70 percent self-supported by permitting fees. PPRP is 98 percent self-supported by permitting fees. The following is a breakdown of the program's funding structure:

P2 sections portion approximately:

\$167,000 (3 positions).

PPRP appropriations for FY 95:

\$1,787,230 (32 positions).

Total agency (DNRP) budget for FY 95:

\$11,447,110 (157 positions).

To date, DNRP's P2 Section has applied for four grants. DNRP was recently informed that their 1995 EPA Environmental Education grant has been funded. The P2 section has also applied to the 1995 Innovations in American Government Awards Program for a Ford Foundation grant of \$100,000. Notification regarding the first round status of the application will be forthcoming. Decisions on two other grant applications, one with the Florida Inland Navigation District for \$90,000 and another with the U.S. EPA for \$100,000 are still pending.

#### Written Materials and Technical Assistance Sources Used

The P2 Section uses a variety of U.S. Environmental Protection Agency, Florida Department of

Environmental Protection, and the California Department of Health Services materials and publications in its everyday technical assistance activities. Examples of these publications include: (Facilities Pollution Prevention Guide; Guide to Pollution Prevention, Waste Minimization Opportunity Assessment Manual, Case studies (US E.P.A.); Florida DEP Fact Sheets; and California Department of Health Services waste audit studies.

In addition to these resources, the section uses information gathered at American Electroplaters and Surface Finishers Society conferences and the Pollution Prevention Workshops sponsored annually by the Florida Association of Environmental Professionals-South Florida Chapter.

#### Public or Private Sector Partners

One of the main goals of this effort is to establish collaborative relationships or public/private partners. To further this goal, the P2 Section worked with the following businesses, industries, governments, and environmental organizations: marinas, electroplating shops, circuit boards manufacturers and other related industries which have metal finishing operations; auto salvage yards; Broward County's hazardous material facilities; the Marine Industries Association of South Florida; the Dade County Pollution Prevention Program; the Waste Reduction Resource Center; the Waste Reduction Institute; the South Florida Manufacturer's Association; the University of Florida TREEO Center (Training, Research and Education for Environmental Occupations); and the Florida Department of Environmental Protection.

### Outcome and Accomplishments

#### Assessment of Effectiveness

The greatest accomplishment of the P2 program is in the collaborative relationship that was established with the regulated community in developing P2-BMPs. Within targeted industries and Broward County facilities, compliance with all applicable federal, state, and local environmental regulations has been enhanced. In addition, implementation of pollution prevention and waste minimization techniques has been furthered. Metal finishing facilities have voluntarily agreed to

develop a facility-specific pollution prevention plan. These pollution prevention plans will be revised and improved annually. By February 1, 1995 each facility which has metal finishing operations is to draw up its own Pollution Prevention Plan. The quantitative and qualitative results of this program will be evaluated one year from now. This does not eliminate any responsibility for complying with environmental laws. This program is achieving results beyond compliance. Businesses are not just meeting pollution standards, but are thinking about every aspect of their operations and implementing methods of reducing hazardous material use, generation of waste, and use of energy and water resources.

These outcomes lead to the protection of Broward County's drinking water, as well as its tourism industry through the preservation of waterways used for boating and other recreational activities.

### **Community and Department Gains**

The pollution prevention approach allowed DNRP, as a regulator, and local businesses, as the regulated community, to improve relations and form a basis for reciprocal trust. The P2 staff would inform facility managers of any violations noted during non-regulatory and confidential site-visits. Without enforcement action, the facility managers are more likely to correct identified problems. P2 staff has followed-up with the facility managers until violations were corrected.

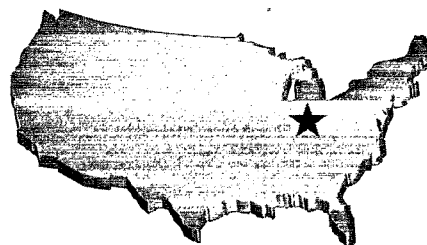
### **Lessons Learned**

Businesses were initially suspicious about the idea of a government non-regulatory program, the confidentiality of site-visits, and the information provided by the P2 staff. They had long perceived county government as a regulator and were not accustomed to its new non-adversarial mission. Through workshops designed for the open and sincere exchange of opinions, they quickly learned that Broward County government had a new attitude. Furthermore, the strong technical knowledge demonstrated by the P2 staff convinced them to implement many of the pollution prevention techniques recommended during site visits.

### **Pollution Prevention Materials Available From Jurisdiction**

The P2 section has several materials available for review including the BMPs for Marinas, Metal Finishing Facilities, and Automobile and Other Salvage Yards. Technical bulletins and fact sheets covering waste reduction opportunities on an industry-by-industry basis are also available to the public.

# Cincinnati, Ohio



## Summary

Cincinnati is aspiring to create a model urban area pollution prevention program through the creation of a multifaceted strategy which focuses on city government operations, business and industries and outreach to the general public. This is being done through pollution prevention (P2) training, technical assistance, and promotional efforts. The city estimates that the potential savings are well over \$2 million for 10 small to medium sized industries that participated in its initial P2 outreach program.

## Program Description

### Impetus for Pollution Prevention Activity

The program began in August 1992 as a result of city leaders recognizing the importance of pollution prevention and identifying opportunities for partnership and assistance from U.S. EPA, University of Cincinnati, American Institute for Pollution Prevention, Institute of Advanced Manufacturing Sciences, and other local resources. In addition, a U.S. EPA/City of Cincinnati agreement provided for solid waste management and P2 assistance through the Intergovernmental Personnel Act (IPA) which provided salary cost sharing for an expert who assisted in the start-up of the city's Pollution Prevention Incentives for States (PPIS) project and P2 program.

The initial goal of the program was to create a model urban area pollution prevention strategy for three sectors: local governments; business/industry; and the general

public. The long range goal was to sustain local government P2 promotion and implementation efforts in all three sectors for community-wide pollution prevention.

### Strategy

The City of Cincinnati is committed to promoting and implementing P2 in its own operations as well as reaching out to area business/industry and the general public. This urban area strategy is an attempt to provide a model program for implementing pollution prevention as the preferred method of environmental protection across an entire community. The city is in the process of adopting a pollution prevention policy statement and implementation plan for "in-house" pollution prevention activities. All city departments and divisions have had P2 training and will be responsible for implementing P2 practices on a daily basis. Baselines and goals are being established along with measurements for improvements and cost savings. The city has also invited other local and state governmental

agencies to participate in P2 training and promotional activities. Some of these focus on P2 opportunities for air and wastewater inspectors. The city has led the community in adopting an "Environmental Preference" purchasing ordinance for all city purchases. One particularly noteworthy example of in-house initiatives has been the conversion from lead, solvent-based highway line striping paints to lead-free, waterborne paints. While retraining employees and converting equipment has been challenging, management and employee commitment is beginning to produce P2 results.

Through the Institute of Advanced Manufacturing Sci-

## Demographics

**Jurisdiction:**  
Cincinnati, Ohio

**Population:**  
City proper: 364,278  
CMSA: 1,744,124

**Type:**  
Urban, suburban

**Contact:**  
J. Bruce Suits, Pollution Prevention  
Program Manager, Office of  
Environmental Management,  
City of Cincinnati,  
Two Centennial Plaza, Suite 610,  
805 Central Avenue,  
Cincinnati, Ohio 45202-1947  
Phone: 513/352-6270  
Fax: 513/352-4970

**Overall Annual Budget of City:**  
Approx. \$718 Million in FY95

**Lead Agency Conducting  
Pollution Prevention Work:**  
Office of Environmental Management  
(Under the Office of the City Manager)

## Cincinnati, Ohio

ences (IAMS), the city is providing P2 training and technical assistance to small and medium-sized businesses. In each business that is assisted, a pollution prevention team usually consisting of employees, management, and a pollution prevention expert is created. After the pollution prevention team conducts an on-site assessment, the company is made aware of the types of waste, pollution, and associated costs that have been identified. The team then conducts a brainstorming session to make suggestions for using alternative processes or materials that would create less waste or use less toxic materials.

### Resources Used

#### Staffing Resources

The P2 program manager in the Office of Environmental Management (OEM) under the City Manager's Office is the city's only full-time staff member dedicated exclusively to P2. This person is responsible for coordinating all in-house government P2 activities (including the PPIS grant). Other individuals in OEM's Solid Waste Management and Employee Safety and Air Quality Sections also dedicate various portions of their work time to the city's P2 efforts. However, OEM's role as P2 coordinator relies on cooperation and assistance from all city departments and divisions. Each department or division director is responsible for implementation and documentation of P2 efforts and improvements. Employees trained in P2 comprise an interdepartmental coordinating committee. The committee serves as a pool from which P2 assistance teams are formed to perform P2 opportunity and waste reduction assessments, and help in brainstorming and implementing improvements. It is important to point out that the city's P2 efforts are being accomplished without the creation of an additional layer of bureaucracy. Instead, the program relies on existing personnel and resources to implement a P2 "culture change" and waste reduction effort throughout city government operations.

#### Expenditures and Funding (October 1992 - February 1995)

Salaries and wages	\$112,320
Fringes	\$31,747
Travel	\$4,000
Training	\$15,404
Equipment/materials/contracted service	\$18,000
Workshops	\$1,665
Indirect overhead	\$24,070
Subcontracted P2 Assistance	\$100,000
<b>Total</b>	<b>\$307,206</b>

Money is received through the U.S. EPA PPIS Matching Grant which passes through the University of Cincinnati, the City General Fund, Infrastructure Fund, and other funds.

#### Written Materials and Technical Assistance Sources Used

A variety of materials were used in the development of the program including the following: EPA's *Facility Pollution Prevention Guide*; Ohio EPA's *Pollution Prevention and Waste Minimization Planning Guidance Manual* and *State of Ohio Pollution Prevention Strategy*; material from other local governments including Anchorage, Alaska's Green Star Program materials; material from other non-profit organizations including the Institute of Advanced Manufacturing Sciences' *Implementing Pollution Prevention At Your Facility*; and materials from the National Pollution Prevention Roundtable and its member organizations, The American Institute for Pollution Prevention and many others.

#### Public or Private Sector Partners

The following organizations have contributed to the success of Cincinnati's P2 program: University of Cincinnati; U.S. EPA; Office of Pollution Prevention, State of Ohio; Institute of Advanced Manufacturing Sciences; National Pollution Prevention Roundtable; American Institute for Pollution Prevention; Air and Waste Management Association; Department for Environmental Services, Hamilton County, Ohio; Environmental Services, State of Kentucky; Kentucky Partners; Environmental Advisory Council, City of Cincinnati; Hamilton County Environmental Action Commission; Greater Cincinnati Chamber of Commerce; Ohio Environmental Council; The Cincinnati Zoo; P2 Peer Review Advisory Committee (General Electric Co., The Procter & Gamble Co., etc.); "Make Peace With Nature" syndicated television program (courtesy of WKRC-TV Cincinnati), Citicable Government Access television; Liebel Flarsheim Co., Amko Plastics, Inc.; and others.

### Outcome and Accomplishments

#### Assessment of Effectiveness

The city is still in the initial stages of implementation of its urban area strategy. However, in the case of the outreach efforts to business and industry, there have been



## Cincinnati, Ohio

some measurable successes in pollution prevention/waste reduction, either realized or projected. Ten small to medium-sized industries have been assisted with P2 training, opportunity assessments, and implementation activities. Potential eliminations or reductions of pollution and wastes were measured in millions of gallons and tons per year. Potential cost savings were well over \$2 million annually, in materials alone. Most of the industries are now in the process of implementing the identified P2 practices.

The city is still in the beginning stages of performing its first departmental, or divisional, P2 waste reduction opportunity assessments. Two "pilot" assessments have just been completed: the City Printing Services and the Municipal Garage. These high profile divisions were selected because it is expected that methods and lessons learned from their operations can be transferred to others, both in and out of the city structure. Other city departments and divisions will soon follow using these two divisions as models and utilizing the "cadre" of trained P2 "cause champions" from their own departments and from the coordinating committee pool in forming interdepartmental P2 assistance teams. This approach will facilitate transfer of information and identification of possible P2 opportunities in similar city operations.

P2 activities related to the third sector of the urban area strategy—the general public—will probably be the most difficult to measure in terms of effectiveness. However, with a goal of making P2 and waste reduction more popular than recycling, future successes in terms of reductions in pollution and wastes across the whole community, from all sources, are expected.

### Community and Department Gains

Still in its early stages, the city's work is ongoing. One example of early gains is that the OEM has eliminated virtually all waste leaving its own office. Paper, the largest part of the office's waste stream, is re-used before it is recycled. All corrugated cardboard is either re-used or recycled, as are packing materials, toner cartridges, newspapers, magazines, metal, plastic, and aluminum. The office is constantly looking for ways to improve and is convinced improvements are possible. The example OEM sets will help other city operations in their efforts. The example set by city government will help the private sector, the general public, and other institutions with their efforts.

### Lessons Learned

In the process of establishing goals for P2 reductions and eliminations for city government operations, it may be prudent to guard against measuring all departments or divisions against each other by an arbitrary starting point. In other words, if the goal is to reduce pollution and waste by 25 percent over a two-year period, make sure entities get credit for what they did prior to the starting point, so that they are not penalized for their good work prior to the baseline measuring point. Cincinnati is paying close attention to this because employee, division, and departmental competition and recognition activities are planned for the near future. As much as possible, there should be a level playing field.

Another piece of advice would be to not give up. P2 is a way of life, an ongoing, neverending process of improvement. The process of implementing a change in waste management culture like P2 is difficult. The "we've always-done-it-that-way" argument can be convincing, as is the statement, "It can't be done." Fortunately, there are now too many businesses, industries, governments, and, most importantly, individuals who can attest that there are better, safer, cleaner, and more responsible ways of doing things.

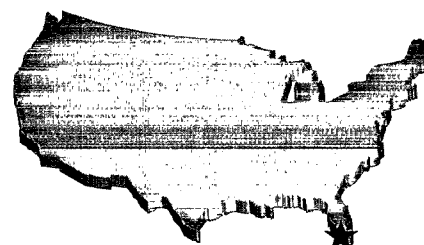
### Pollution Prevention Materials Available From Jurisdiction

Available in September 1995: Videotape copies of the "Make Peace With Nature" television program special series on P2 (produced by WKRC-TV Cincinnati)—a series of interviews with representatives from business, industry, government (federal, state and local), and non-profit organizations (including the National Pollution Prevention Roundtable), all agreeing on one thing: P2 pays!

Available in September 1995: Copies of videotape on Cincinnati's experience with changing over from solvent-based, leaded highway line striping paints to water borne, no-lead paints. This video and its companion report may help others avoid some of the problems and delays Cincinnati has encountered.

Available in September 1995: Final report (and possible video) on the PPIS grant project "Urban Area Pollution Prevention Strategy," which will list and discuss the City of Cincinnati's project and ongoing model program, including successes and failures, boosts and barriers, problems, and solutions.

# Dade County, Florida



## Summary

Dade County is comprised of a relatively small urban area, with a sprawling suburban community and an outlying rural area in the southern region of the county.

Dade County Department of Environmental Resources Management (DERM) has provided local assistance for the multitude of large, medium, and small businesses and industries in need of assistance since it became apparent in 1992 that enforcement alone was not adequate to protect South Florida's unique environment effectively.

## Program Description

### Impetus for Pollution Prevention Activity

Although some pollution prevention (P2) activities were initiated beforehand, Dade County's pollution prevention program officially began in October 1992 with funding from the Florida Department of Environmental Protection (DEP) through Florida EPA. The duration of the grant is three years (ending date December, 1995), however DERM will continue to fund the program after the grant expires.

The US Environmental Protection Agency's Pollution Prevention Incentive for the States (PPIS) Grant was the primary impetus because it provided initial funding for the program, as well as an opportunity for the State (FDEP) and Dade County DERM to work cooperatively on implementing pollution prevention at the local

## Demographics

### Jurisdiction:

Dade County, Florida

### Population:

Over two million

### Type:

Urban, Suburban

### Contact:

Nichole Hefty, Program Manager  
Dade Co. Dept. of Environmental  
Resources Management (DERM)  
33 S.W. 2nd Ave, Suite 1200  
Miami, Florida 33130-1540  
Phone: 305/372-6825  
Fax: 305/372-6760

### Overall Annual Budget of

County:  
\$2 billion

### Lead Agency Conducting P2

#### Work:

Department of Environmental  
Resources (DERM)

level. One of the most important state and local factors providing impetus for environmental regulation and initiative is the fact that Southeast Florida's only source of drinking water is the Biscayne Aquifer, ranging from three to ten feet below the surface of the ground in Dade County. Therefore, it is imperative that all measures are taken to protect this aquifer from contamination.

DERM has traditionally been an enforcement-oriented agency, until it became apparent that enforcement alone was not adequate to effectively protect South Florida's unique environment. This program was established to provide local assistance to businesses and industries in need of assistance. Further-more, the size and population of Dade County alone dictate that it be a leader in pollution prevention and set an example for the rest of the state.

The initial program goals were as follows:

- train DERM and other county staff;
- provide on-site technical assistance to county departments and local industry and help them implement pollution prevention measures;
- provide/host educational workshops/technology transfer for local industry, government agencies, and P2 partners;
- produce and distribute P2/waste minimization educational material for local industry & county departments; and
- develop partnerships and educational modules with local educational institutions (all levels).

The program focuses on the following:

- solid waste management;
- purchasing;
- POTW;
- consumer education;
- fleet maintenance;
- stormwater run-off;
- technical assistance to businesses;
- air pollution issues;
- facilities/buildings;
- energy conservation;
- small quantity hazardous waste;
- all inclusive, multi-media (primary focus); and
- county departments.

## Strategy

This program strives to implement pollution prevention at the local level by: 1) providing training to in-house staff as well as to staff of all other county departments, 2) sponsoring and hosting multiple annual workshops, 3) producing and distributing educational material (including a quarterly newsletter with a materials exchange), 4) providing on-site technical assistance to county departments and local industry, and 5) integrating pollution prevention into enforcement consent agreements.

In-house pollution prevention measures include standard office waste minimization practices such as double-sided copies, reuse of single-sided paper for printing of draft copies, and posting or circulation of memos (instead of copies for each employee).

An example of a noteworthy activity is the Solvent Alternatives Exposition, held in Miami in November 1993. This exposition brought government and industry experts together with local and regional industry for a full-day of workshops on waste minimization, pollution prevention, and solvent alternatives. It included a full exhibit floor where participants could further research the alternatives presented in the sessions and speak to representatives of companies which could provide these alternatives. In addition to standard table-top displays, some vendors set up actual operating equipment. This enabled participants to bring in parts or other items that required cleaning and actually see first-hand the viability of a particular cleaning alternative or type of equipment. There were more than 300 participants in this exposition and program staff still continues to get positive feedback on the event. The second annual Solvent Alternatives Exposition was held on March 7-8, 1995 in Miami and was also a great success. This year's exposition targeted solvent

alternatives and pollution prevention for the printing and painting industries, as well as cleaning applications for all types of industry.

## Resources Used

### Staffing Resources

A half-time program manager is responsible for administering the PPIS Grant and managing the P2 program and staff, (including speaking engagements, publicity, workshop organization, networking, training of county staff, technical assistance to local industry, and production of newsletter). The program is also staffed by a full-time engineer and a part-time clerk. Two administrative services staff devote 20 percent of their time. One computer services staff member works half time for the P2 program. In addition 13 staff members from various DERM divisions also support the project.

### Expenditures and Funding Sources

PPIS Grant - \$300,000 over three years

Montenay Agreement - \$75,000 (\$65,000 for program manager and \$10,000 for part-time Clerk)

Joint Grant with DERM Air Section - \$38,000

2 Staff from Administrative Services reassigned to assist P2 Program part-time (listed above).

### Written Materials and Technical Assistance Sources Used

The written materials and technical assistance sources most commonly used are as follows:

- EPA documents- P2 Guides, i.e. "Facility P2 Guide"
- state materials- P2 Programs
- material from other local governments' P2 Programs
- material from universities University of Texas., Mississippi State
- material from other non-profit organizations- Inform, EDF
- other sources/contacts (Waste Reduction Resource Center) WRRC; Solvents Alternatives Guide (SAGE)

The program keeps a large library of documents and information for assistance to industry and county

departments making it difficult to name specific documents. The EPA, the WRRC, and other P2 Programs have been the most helpful.

### Public or Private Sector Partners

The following organizations have played partnership roles in the P2 program:

Industry Environmental Association (IEA), Greater Miami Chamber of Commerce, Automotive Services Association (ASA), FL Dept. of Env. Protection (FDEP), Dade Co. Departments, Broward Co. Dept. of Nat. Resources Protection (DNRP), EPA Region IV, American Business Women's Association (ABWA), Miami-Dade Community College (MDCC), S. Fla. Assoc. of Env. Professionals (SFAEP).

## Outcomes and Accomplishments

### Assessment of Effectiveness

Overall, the P2 program has been very successful in meeting its goals. In addition to training several county departments and initiating P2 measures at various Dade County facilities, it has assisted several local industrial facilities. During the two-and-a-half-year span of the program, it has hosted or participated in more than 15 local and regional educational workshops addressing pollution prevention. The success of the workshops is measured by the attendance numbers as well as responses to questionnaires. The newsletter has received positive feedback with many requests for people to be included on the mailing list (currently over 1,000).

Program staff would like to provide more assistance to both local industry and county departments. However due to the small number of staff (3 full time), it has been more effective to concentrate efforts towards education (workshops and training) to reach the greatest number of facilities and individuals. The county also hopes that more staff will be assigned to the program within the next year, which would allow more resources to be devoted to on-site technical assistance.

### Community and Department Gains

Even though the program is only two-and-a-half-years old, Dade County has benefited in many ways. Through the efforts of the pollution prevention pro-

gram, DERM has gained a much better public image, particularly in the industrial community. DERM has historically been an enforcement-oriented agency and now the industrial community is beginning to see that DERM can and will extend a helping hand. Although it is hard to document, it is also anticipated that by educating and assisting the regulated community, the number of enforcement actions and new or repeat clean-ups (remediation) will be reduced. Furthermore, initiating pollution prevention at county facilities sends an important message to the community. This sets an example for local industry to follow and shows the entire community that the county government is dedicated to protecting the county's valuable resources and environment. Any facilities, private or county, implementing pollution prevention, benefit by becoming better educated, saving money, decreasing liability and dealing with fewer regulators (DERM enforcement). In addition, their success stories are published in the P2 newsletter, providing good public relations. The community as a whole benefits from better education and increased environmental responsibility from industry.

### Lessons Learned

*Technical assistance is difficult with small staff.* The program has been unable to conduct the number of on-site technical assistance audits originally anticipated and it is difficult to properly follow through with those facilities assisted. It has been determined that the program would more effectively benefit the community by concentrating efforts on education (workshops, training, newsletter, etc.). The program has also obtained assistance with on-site technical audits from Florida DEP's Retired Engineers Waste Reduction Assistance Program (REWRAP).

*The bureaucratic system is a general barrier.* Burdensome procedural requirements and delays present many barriers. For example, it is often difficult to produce educational workshops in a timely and efficient manner. It is imperative that program staff plan well in advance. The program also established a Pollution Prevention Trust Fund from which it will finance workshops. This will allow staff to bypass the cumbersome and time-consuming county bid process.

*DERM's existing reputation.* Due to DERM's history and reputation of strict enforcement, local industry is skeptical of the P2 program's offer of technical assistance, afraid this may be a coy means by which regulators can infiltrate their facilities and are hesitant to invite DERM into their facilities. This is being overcome by having the state's retired engineers help with

## Dade County, Florida

on-site audits (local facilities are less afraid of the state) and by working closely with local trade associations (i.e., ASA, IEA, etc.). The trade associations are an extremely important ally because they introduce the program and its benefits to their members and promote the validity and value of the P2 program's assistance and workshops. The success of the workshops has also been important in demonstrating to the community that DERM is really willing to provide assistance and that this assistance is valuable. Furthermore, those facilities that have received technical assistance from the program are publicizing its good work.

*It is difficult to overcome inertia.* The difficulty of enticing people to change is well documented and Dade County's program has encountered that internally, within the department, as well as externally. Those who are accustomed to being regulators are hesitant to give up the ticket books and "Notice of Violations" and offer P2 solutions instead (in enforcement settlements). Similarly, field inspectors who are accustomed to looking for violations and issuing notices are hesitant to offer "low-tech" P2 tips in the field. A persistent education campaign and encouragement, as well as involvement in the P2 program and decision-making process (for enforcement settlements) is helping to overcome this barrier. It has also been difficult to implement the P2 ethic throughout the department for a number of reasons. This is being overcome by involving all sections, allowing them to initiate their own P2

measures, and encouraging other sections to do the same (rather than having all P2 tips and encouragement come only from the P2 Program). This requires a cooperative effort which, in itself, is sometimes difficult to obtain in such an organization.

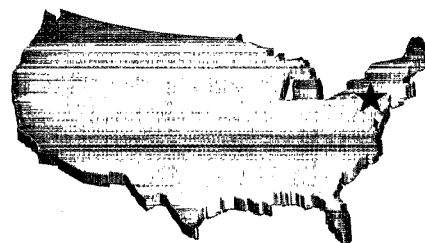
### **Pollution Prevention Materials Available from Jurisdiction**

Pollution Prevention Quarterly (Newsletter)  
New Best Management Practices and P2 Tips booklets  
*Implementing Pollution Prevention at the Local Level Guidebook* (currently being developed, will be completed by October, 1995)

### **Additional Comments**

Considering that this program has only been in existence for two and a half years, has a staff of three and operates on a budget of \$100,000 per year, staff believes the program has made substantial accomplishments. Dade County's program has developed a reputation throughout Region IV as one of the leading pollution prevention programs. The program has set a prime example of how successful pollution prevention efforts can be implemented at the local level. The county hopes that, with the assistance of this guidebook, other local governments and organizations will follow its lead.

# Erie County, New York



## Summary

While, most of the geographic area of Erie County is agricultural and suburban, most of the population of the county lives in the urban Buffalo area. The Erie County Office of Pollution Prevention was established to provide pollution prevention/environmental compliance assistance to small and medium sized businesses. The initial program goals were to reduce pollutant loadings from all media throughout the county and to educate small and medium sized businesses on how to reduce waste generation at the source.

## Program Description

### Impetus for Pollution Prevention Activity

The county's Small Business Assistance Program was started in 1985 and the pollution prevention (P2) program was initiated in 1990.

The Erie County Office of Pollution Prevention was established to provide pollution prevention/environmental compliance assistance to small- and medium-sized businesses. State level agencies intended to concentrate their pollution prevention efforts on larger facilities, even though smaller facilities were subject to the same regulations and, when considered as a whole, constituted a major source of pollutant generation and a major percentage of the local economy in Erie County.

The initial program goals were to reduce pollutant

## Demographics

### Jurisdiction:

Erie County, New York

### Population:

980,000

### Type:

Urban, Suburban, Rural

### Contact:

Thomas R. Hersey Jr.  
P2 Program Coordinator  
Erie County DEP  
95 Franklin Street, Room 1077  
Buffalo, NY 14202  
Phone: 716/858-7674  
Fax: 716/858-7713

### Overall Annual Budget of County:

\$1 billion

### Lead Agency Conducting

### Pollution Prevention Work:

Office of Pollution Prevention and  
Division of Environmental Compliance

loadings from all media throughout the county and to educate small- and medium-sized businesses on how to reduce waste generated at the source.

The main foci of the program includes the following:

- solid waste management,
- publicly owned treatment works,
- consumer education,
- fleet maintenance,
- stormwater run-off,
- technical assistance to businesses,
- air pollution issues,
- facilities/buildings,
- small quantity hazardous waste,
- all inclusive, multi-media, and
- agricultural business.

## Strategy

The Erie County Office of Pollution Prevention (ECOPP) conducts programs aimed at reducing air, land, and water

pollution in Erie County. The industrial pollution prevention program provides information and technical assistance to businesses and public agencies, and evaluates innovative technologies designed to reduce pollution. Since May 1990, more than 250 industrially diverse businesses have received on-site facility reviews to identify pollution prevention opportunities. Workshops/training seminars instruct participants how to identify practical and economical measures to implement pollution prevention into their operations. ECOPP is currently focusing its efforts on local government officials' (Publicly Owned Treatment Works inspectors, building inspectors, etc.) role in promoting pollution prevention.

## Resources Used

### Staffing Resources

Coordinator  
Environmental Compliance Specialist  
Environmental Compliance Specialist  
Environmental, Hazardous Waste

All staff are part of the Department of Environment and Planning and spend 100 percent of their time on this effort.

### Expenditures and Funding Sources

Average annual pollution prevention expenditures (both grant and county-line funding) is approximately \$150,000 which covers the following expenses:

Costs	Percentage of budget
Personnel	60%
Fringe Benefits	10%
Equipment	2%
Travel	2%
Supply	2%
Contractual	22%
Office	2%

Staff is funded by a combination of federal and state grants and county resources.

### Written Materials and Technical Assistance Sources Used

The program relies on a variety of information resources including:

- EPA documents,
- state materials,
- material from other local governments,
- material from universities, case study information, technology research and
- development reports,
- networking with P2 programs from every level of government.

ECOPP has established a pollution prevention library with resources and databases of equipment and substitute materials. Additional information or listings of these resources is available.

### Public or Private Sector Partners

The following organizations have played a partnership role in Erie County's pollution prevention efforts:

State University of New York at Buffalo, Buffalo Sewer Authority, Western New York Technology Development Center, NYS Environmental Facilities Corporation, NYS Department of Environmental Conservation, Western New York Economic Development Corporation, Amherst Industrial Development Agency, and various municipalities.

## Outcomes and Accomplishments

### Assessment of Effectiveness

The program met its initial goals in that clients have become aware of pollution prevention and have attempted to reduce the amount of waste they produce. The pollution prevention program conducts a six-month call-back after the on-site facility review. The reason for this is to identify any measures implemented by clients. Success and measurements, such as changes in procedures and costs savings, were documented on a case-by-case basis which could later be used as examples for similar facilities.

In an evaluation of the Erie County program, 77 percent of the survey respondents had 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. Seventy-eight percent of the respondents indicated that they anticipate implementing ECOPP recommendations in the future. Most stated that implementation was contingent upon the cost effectiveness and applicability of the recommendations. Fifty-eight percent replied that they had implemented internally-generated pollution prevention strategies. Ninety-one percent of the respondents felt that their facility was more aware of pollution prevention as a result of ECOPP services.

### Community and Department Gains

The department gained recognition throughout the business community as an agency that provides non-regulatory, confidential, P2/environmental compliance service free of charge.

### Lessons Learned

Other jurisdictions should be advised to go through the proper channels. Even though a program may satisfy all clientele needs, an extensive outreach program is essential. Support from trade associations, suppliers, and other agencies (e.g. economic development) will give a program much needed recognition. A mailing list of newsletters and environmental bulletins will keep the program's name on someone's desk.

Small businesses require a lot of hand-holding to encourage the type of change associated with adopting pollution prevention strategies. Due to limited program resources and a target client base of over 5,000 small businesses, the Erie County staff could only spend a limited amount of time with each facility. Erie County is expanding its pollution prevention force by training other local government officials to use their interfaces with industry to promote pollution prevention.

### Pollution Prevention Materials Available from Jurisdiction

The following materials are available:

*Evaluation Report of Erie County Pollution Prevention Program* - 1993

*Policy Report Creating Pollution Prevention Incentives for Small Businesses* - 1993

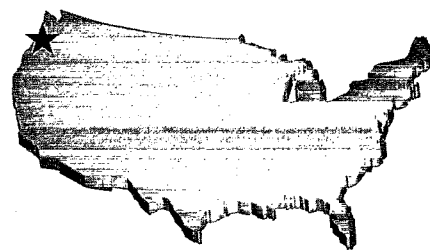
*Evaluation Report for Municipal POTW Pretreatment Inspectors* - 1994

*Final Report for Pollution Prevention Incentives for States Grant* - 1994

*Pollution Prevention Case Studies* - 1993, 1994



# King County, Washington



## Summary

King County encompasses about 2,140 square miles, half of which is federal or commercial forest land. The dominant economy of the Puget Sound area is the resource sector (forestry, fishing, mining) and the manufacturing sector (wood products, food products, and transportation machinery); the service sector is the fastest growing sector. King County, in conjunction with the City of Seattle, delivers pollution prevention information to businesses and citizens as part of its management plan for small quantity hazardous waste.

Implemented in 1991, this program includes information exchange, technical assistance, field visits to specific small businesses, household hazardous waste programs, and interagency regulatory analysis. It is estimated that approximately 20,000 small businesses within the county may be conditionally exempt small quantity generators.

## Program Description

### Impetus for Pollution Prevention Activity

Delivering pollution prevention assistance to businesses and households fulfills a Washington State Department of

increase to 33,000 tons per year by 2009.

## Demographics

### Jurisdiction:

King County, Washington

### Population:

1.6 million

### Type:

Urban/suburban

### Contact:

Information Contact:

**Cynthia Balogh**, Project Coordinator,  
Technical Assistance and Pollution  
Prevention 206/689-3075;

Program Manager:

**David Galvin**, Program Manager, King  
County Department of Metropolitan  
Services 206/689-3085

Local Hazardous Waste Management  
Program in King County (LHWMP)

130 Nickerson, STE 100

Seattle WA 98109-1658

Phone: 206/689-3050

Fax: 206/689-3070

### Overall Annual Budget of County:

\$1,158,906,329

### Lead Agencies Conducting Pollution Prevention Work:

The Local Hazardous Waste Management Program (LHWMP): King County Department of Metropolitan Services (Metro); Seattle-King County Department of Public Health; King County Solid Waste Division; Seattle Solid Waste Utility; and 32 suburban cities

Ecology mandate contained in the State Hazardous Waste Management Act. The Act requires King County to provide a plan to manage hazardous wastes generated in small quantities by households and businesses. The plan to address conditionally exempt small quantity generators (CESQGs) and household hazardous waste (HHW) in all local jurisdictions was adopted in 1990, with implementation beginning in 1991. The program is ongoing, subject to five-year review periods.

Guidelines on implementing the mandate require programs to provide technical assistance within the framework of a waste management hierarchy that prioritizes waste reduction and recycling. In response to the needs of small businesses, some pollution prevention work had begun prior to the mandate.

The goal of the program is to reduce the amount of hazardous materials entering municipal waste systems and sensitive water bodies in King County for the protection of public health. An estimated 19,000 tons of hazardous waste was found in King County's municipal waste streams in 1989, two-thirds of which was generated by businesses and one-third from households. If the county did not address this problem, improperly disposed of hazardous waste was projected to

## King County, Washington

### Strategy

The county works collaboratively with businesses and industry on pollution prevention activities, building on businesses' knowledge of specific problems and processes. The Local Hazardous Waste Management Program (LHWMP) offers businesses connections with county and city agencies, hazardous waste information and experience in waste reduction, recycling, and treatment. The following is a list of specific pollution prevention activities the county has undertaken:

**Waste Information Network (WIN):** WIN provides a non-threatening forum for discussing and resolving waste issues that affect small businesses. Participants in these forums include private businesses, public agencies and other groups. Established in 1987, WIN offers an annual Waste Expo, environmental achievement awards, monthly meetings, and a newsletter.

**Technical Assistance:** LHWMP offers technical help with waste characterization, waste reduction, recycling, and treatment for small businesses. The program focuses on priority industries (dental, auto body, automotive, and screen printers).

**Hazardous Waste Library:** The library provides reference help to the general public, businesses, and county agencies including on-line database searches, in-house resources, and information sharing.

**Field Work:** Four field teams work directly with small businesses to tailor hazardous waste management — including pollution prevention information — to their particular needs. The teams conduct surveys by geographical area, priority industry audits, on-site consultations as requested by businesses, and complaint call response. Two teams, in particular, conduct detailed, on-site, pollution prevention technical assistance with local companies.

**Business Waste Line:** Provides answers to questions from small businesses about their hazardous waste.

**Interagency Regulatory Analysis Committee:** Helps address regulatory barriers to pollution prevention and regulatory issues around recycling. The Committee has reviewed issues such as the use of solvent stills, stormwater best management practices, and the "Envirostars", a recognition program.

**Household Hazardous Waste (HHW) Education:** Emphasizes on personal contact to inform citizens about alternatives to hazardous materials in the household; includes a consumer report-style Buyer's Guide.

**HHW Schools Program:** Provides resources for teachers, including curriculum for grades 4-12.

**Disposal Options:** There are two permanent household hazardous waste depots in the City of Seattle and wastemobile service throughout the rest of the county. The disposal of waste from conditionally exempt small quantity generators is primarily covered by private transport storage and disposal services. To provide low cost disposal on a regular basis may be a counter incentive for reducing hazardous waste at the front end. Instead, the county is piloting a voucher program that would help businesses pay for a one-time disposal of accumulated hazardous waste. This activity is coupled with an on-site consultation to find better ways of avoiding unnecessary waste.

**Pollution Prevention Incentives:** To encourage pollution prevention activities within the private sector, the county provides the following incentives:

**Envirostars** — A four-level recognition program for businesses that reduce and properly manage their hazardous wastes. Recognition begins with decals, logos and certificates and increases to include public relations pieces, local media advertisements, and nominations to state, local, and national environmental awards.

**Success Stories** — Profiles of businesses reducing hazardous waste are written and distributed to local media. Success stories are also published in a quarterly newsletter.

**WIN Awards** — Annual environmental achievement awards are presented to businesses for significant and comprehensive accomplishments in minimizing use of hazardous materials, developing less hazardous products, and fostering an ethic of personal responsibility for the environment among staff, colleagues, and the public.

**Incentives Database** — A database provides information on loans, grants, and awards available to small businesses for pollution prevention efforts.

## Resources Used

### Staffing Resources

Drawn from four county and city agencies, the following staff works on the county pollution prevention program. The entire Local Hazardous Waste Management Program (LHWMP) is based on the principles of waste reduction and recycling before treatment and disposal. The county estimates that approximately 20-25 percent of these staff members' time is devoted specifically to pollution prevention duties.

#### Local Hazardous Waste Management Program:

Agency	Staff
King County Solid Waste Division	5
Seattle King County Health Department	25
Seattle Solid Waste Utility	12
King County Dept. of Metropolitan Services	27

Education, outreach, and field groups integrate pollution prevention into their work. The Technical Assistance and Pollution Prevention group, housed within the Department of Metropolitan Services, consists of four people. Two of those staff members focus on waste characterization and treatment, while two focus on promotion of pollution prevention. Contract workers are also hired for special projects.

### Expenditures and Funding Sources

The overall LHWMP budget is about \$10 million. The Metro hazardous waste section budget is about \$2.5 million. The budget for technical assistance, waste characterization, and pollution prevention (four full-time staff) is \$738,566.

The program is funded through fees added to commercial and residential garbage and sewer rates. A portion of the funding comes from a Department of Ecology grant.

### Written Materials and Technical Assistance Sources Used

The county has used EPA documents as well as material generated by the state and other local governments for the design and implementation of its program. The most helpful materials have been sampling and characterization studies, field demonstrations, and detailed industry-specific profiles.

### Public or Private Sector Partners

King County's pollution prevention program is a cooperative effort between several county agencies, the City of Seattle, suburban cities, the State Department of Ecology, industry-specific advisory groups consisting of regulatory agencies, business associations, business owners/managers, vendors associated with specific industries (e.g., dental, dry cleaners, screen printers, autobody, automotive repair), the Neighborhood Business Council, and local citizen environmental groups (Washington Toxics Coalition, Metrocenter YMCA, Puget Soundkeeper Alliance, and the Environmental Council of South Seattle).

## Outcome and Accomplishments

### Assessment of Effectiveness

King County is working to more effectively measure the success of its pollution prevention programs. For example, specific target goals will now be formulated at the outset of industry campaigns. A sample goal statement might be: "At the end of our campaign, 75 percent of businesses in this sector will be handling hazardous waste properly based on field observations and follow-up information." The prime reason for taking a more rigorous approach is to inform policy makers and managers in the five coordinating agencies on the progress and direction of the program. The county produces quarterly and annual program reports describing progress made in achieving program and team goals using performance and impact indicators. The annual report is distributed to elected officials and other interested parties.

### Community and Department Gains

King County's pollution prevention program is reaping environmental and public health gains. County agencies have also improved working relationships with local business groups and have received both local and national recognition for the program.

Many businesses practicing pollution prevention have saved in disposal costs and regulatory fees, material and utility costs, and have increased customer approval. For example, a furniture refinisher saves \$2,500 per year in disposal costs by reusing waste-

water. A muffler shop saves \$5,700 per year by eliminating chlorinated aerosols; they save another \$6,400 per year using the county's Industrial Materials Exchange. By switching to a dry-to-dry, closed loop system, a local dry cleaner saves \$2,500 per year on perchloroethylene and \$780 per year on water. (These savings do not include reduced liability or always reflect savings in utility costs and all disposal fees.)

In terms of environmental and public health achievements, in 1994, the activities of the field team that offers the most in-depth technical assistance yielded the following: 273 businesses were visited, 135 follow up visits were conducted. As a result of visits to the 135 follow-ups sites, 3,640 gallons per year of hazardous waste were no longer being generated; 360 gallons per year of hazardous waste were no longer going into landfills; 3,400 solvent-containing rags per year were no longer going to landfills; 2,625 gallons per year of hazardous waste were no longer being disposed of in sewers; 500 gallons per year were avoided from disposal in stormdrains.

### Lessons Learned

#### Barriers to the Implementation of Pollution Prevention:

- businesses' fear and mistrust of government's offer to "help" them
- businesses' feeling overwhelmed by paperwork

and regulations

- businesses' desire for a quick-fix or "drop in" alternatives.
- conflicting and overlapping regulations
- some regulations are counter-productive to waste reduction

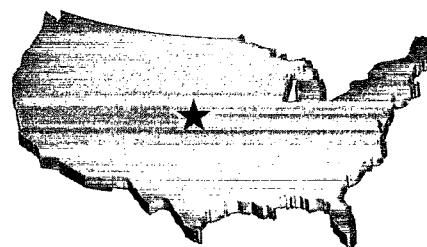
#### Successful Approaches:

- Respect the needs and knowledge of business owners and employees. Earn their trust.
- Remember, cooperation is the key. Develop advisory boards made up of regulators, business owners, and associations as well as vendors associated with specific industries.
- Work with other agencies, tear down territorial walls, and change regulations so that they make sense and are effective.
- Research alternative processes, products, and reduce/reuse/recycle possibilities.

#### Pollution Prevention Materials Available From Jurisdiction

The county has a wealth of written materials available on a wide range of pollution prevention topics. Please call for a complete listing.

# Lincoln-Lancaster County, Nebraska



## Summary

The Lincoln-Lancaster County Health Department (LLCHD) runs an exemplary pollution prevention program. While it encompasses many traditional environmental health activities, it is unique in that it integrates pollution prevention (P2) into all of its media programs, thereby moving higher up the waste management hierarchy to prevent the generation of waste. By working with businesses in the community and offering them information, education, and economically viable solutions to their waste problems, Lincoln-Lancaster County Health Department achieves its goal to reduce or eliminate the source of pollution as a means to reduce risks to human health and the environment.

## Program Description

### Impetus for Pollution Prevention Activity

LLCHD's current pollution prevention program evolved from a waste disposal permitting program (known as the Special Waste Program) that began with a grant from the U.S. Environmental Protection Agency (EPA) in 1986. The program stemmed from a recommendation of the Hazardous Pollutants Advisory Committee, a local focus group formed in late 1984, to define public concerns and issues dealing with threats

## Demographics

### Jurisdiction:

City of Lincoln and Lancaster County, Nebraska

### Population:

City of Lincoln - 196,000;  
Lancaster County - 19,000

### Type:

Urban and rural

### Contact:

Scott Holmes,  
Environmental Health Chief  
Lincoln - Lancaster County Health  
Department  
3140 N Street  
Lincoln, NE 68510  
Phone: 402/441-8634  
Fax: 402/441-8323

### Overall Annual Budget of

#### Jurisdiction:

City: \$78 million County: \$72 million

### Lead Agency Conducting Pollution Prevention Work:

Lincoln-Lancaster County Health  
Department (LLCHD) Environmental  
Health Division

to environmental health. Currently, LLCHD operates a range of pollution prevention programs listed below.

The Special Waste Program began as a hazardous waste exclusion process for the operation of a new city/county landfill. LLCHD moved the program further up the waste management hierarchy from managing wastes to preventing pollution at the front end. The evolution towards a pollution prevention focus was based on LLCHD's Environmental Health Division goal to assure that the interaction between the environment and people minimizes the risk to public health and well-being.

In early 1985, the Hazardous Pollutant Advisory Committee (HPAC) set the following goals for LLCHD Environmental Health Division:

- To prevent pollution by providing information to the public relating to the proper use, storage, handling, and disposal of substances that pose a health hazard.
- To ensure Lincoln-Lancaster County government agencies protect the health of the citizens, minimize damage to environment and wildlife, and

protect property from the adverse effects of hazardous pollutants by coordinating the effort.

- To establish a county hazardous waste collection program.
- To protect the ground water supply in Lancaster County from chemical contamination.

In 1989, the goals of the Special Waste Program

were to:

- Protect public health and the environment by assuring proper management of special and hazardous waste generated.
- Identify waste assistance needs through program data.
- Provide technical assistance and education to waste generators concerning waste reduction, recycling, and waste exchange.
- Protect the health of waste handlers and disposal facility workers.
- Reduce possible future city liability associated with the landfill and to meet the initial phase of Lancaster County's Landfill Hazardous Waste Exclusion Program mandated by EPA.

## Strategy

**The Pollution Prevention Program:** The Pollution Prevention Program accomplishes its goal of toxicity reduction through pollution prevention by increasing the public's understanding of chemical toxicity in relation to decisions made on product purchase, use, handling, storage and disposal. After developing a better understanding of the problem, LLCHD provides assistance to residents and businesses in identifying less hazardous alternatives to current practices.

**The Special Waste Program:** The Special Waste Program administers a regulatory pollution prevention and toxics use reduction (P2/TUR) program in conjunction with the City Public Works Department and the Nebraska Department of Environmental Quality. The Special Waste Inventory/Permit Application is a survey which collects information about wastes generated in the county. By ordinance, all businesses and agencies in the county need to fill out an inventory; those who wish to dispose of special waste need a permit. LLCHD offers all businesses on-site assistance with developing waste reduction strategies. An on-site visit can result in suggestions for changing input material to lower toxicity, improving operating practices and incorporating new process technologies. This process not only educates businesses in appropriate disposal methods, but, more importantly, it gives LLCHD an opportunity to present the business owner with pollution prevention options.

*Editor's Note: The Special Waste Program is the strongest promoter of P2, reaching every business in*

*Lincoln with its educational, action-oriented process. The strength of the Special Waste Program, and indeed all of LLCHD's programs, is that prevention was incorporated into the design of the program so that as the program grew, the goal of pollution prevention could be achieved.*

**The Household Hazardous Waste (HHW) Program:** The HHW Program holds monthly HHW collections from April to September and gives the public advice and information on ways to identify and reduce consumption of toxic products, and choose available alternative products. LLCHD offers citizens an opportunity to safely dispose of their otherwise unregulated hazardous wastes, because it serves to effectively "open the door" to teaching toxic use reduction techniques in the home.

**The Outdoor Air Quality Program:** The Outdoor Air Quality Program reviews construction plans, issues permits and conducts compliance inspections and monitoring to fulfill the requirements of federal, state and local air regulations for sources in Lincoln-Lancaster County. Delegation of the Title V Federal Operating Permits Program recently has been approved by the EPA. Small business technical assistance is a required part of that program and LLCHD is expanding the focus from outdoor air exclusively to include multi-media pollution prevention. As part of its technical assistance, LLCHD offers alternatives to common waste problems, but also provides the bridge with other resources, such as the Federal Laboratory Consortium, the National and Regional Technology Transfer Centers, and/or the University of Nebraska.

**The Water-Wastewater Program:** The Water-Wastewater Program provides for safe private sources of drinking water by inspecting new wells and sewage systems. While the basic inspection component of this program is a management activity, the program moves towards prevention by incorporating pollution prevention into its future planning. Plan reviews for new subdivisions and sewer extensions assess potential impact of new projects on public health and the environment.

**The Wellhead Protection Project:** The grant-funded Wellhead Protection Project identifies village well recharge areas and potential sources of contami-

nation in an effort to prevent any future drinking water pollution. On-site farm P2 assessments are now being done in wellhead protection areas.

**The Clean Community System (CCS):** CCS has a goal of modifying behavior and changing attitudes of the public in order to implement pollution prevention. CCS takes a "grassroots" approach to environmental education and frequently mobilizes citizen groups, neighborhoods, and local schools.

CCS provides educational displays and activities focusing on how to identify and prevent non-point source water pollution at the Lancaster County and Nebraska State Fairs. One major effort is the Stormwater Awareness Project (SWAP), which involves local Boy Scout troops and other volunteers stenciling storm drains with "No Dumping" and "Goes To Stream."

**Special Recognition Program:** The sixth annual Earth Day presentation of Environmental Awards included a category for Pollution Prevention in 1994. Two local industries received the award for making operational changes to reduce the quantity and toxicity of waste generated at the source.

## Resources Used

### Staffing Resources

One quarter-time Assistant Chief  
Two full-time Environmental Engineers  
One quarter-time Environmental Health Specialist  
Two full-time Community Health Educators  
One full-time and one half-time Office Assistants  
One full-time student intern

### Expenditures and Funding Sources

**Expenditures:** \$530,000/annum

#### Funding Sources:

Permit fees	\$45,000
Landfill gate fees	\$240,000
Grants	\$40,000
Air emission fees	\$115,000
City/County general	\$90,000

## Public or Private Sector Partners

The Public Works and Utilities Department and the Nebraska Department of Environmental Quality have played key partnership roles in the program. The National Pollution Prevention Roundtable, U.S. Environmental Protection Agency (EPA) Region 7, Region 7 Pollution Prevention Roundtable, and volunteers from several local businesses and industry have also participated.

## Outcome and Accomplishments

### Assessment of Effectiveness

The county has witnessed a tremendous reduction in the wastes going to the landfill and treatment plant. As evidence that education has had an effect, this year LLCHD received an increase in the amount of waste reported by businesses which were given a list of wastes LLCHD expected to be associated with their specific standard industry classification (SIC) code.

### Community and Department Gains

The city/county has experienced a decrease in long-term liability from landfill operations; easier stormwater and landfill permitting; decreased risks to public health, environment and occupational health; vast reduction in the quantity of very old pesticides stored at home; and increased knowledge of regulations as evidenced by reporting by citizens and business of waste generators who dump waste illegal. In short, Lincoln-Lancaster County has achieved a better environmentally-educated populace and safer workplaces.

### Lessons Learned

The program is currently undergoing a complete review. Some of the problems encountered with the multi-agency efforts have to do with trying to maintain focus on the shared goals, rather than becoming swayed by other legitimate, but tangential, needs. Proving the point of pollution prevention in the workplace sometimes requires accounting for long-term liability, which some business owners (those struggling with today's problems) seem less willing to factor in.

### **Pollution Prevention Materials Available From Jurisdiction**

The following documents were developed by LLCHD, and are available upon request:

#### **Periodicals and Updates:**

Pollution Prevention quarterly newsletter- *The Ethic*  
Clean Community System quarterly

newsletter - *Outlook*

Wellhead Protection Program -

*The Underground Supply*

#### **Fact Sheets:**

*Be a Good Neighbor...Use Pesticides Safely*

*Be Yard Smart, Use Yard Chemicals With Care*

*Automotive Waste*

*Reusing, Recycling and Disposing of Paint*

*Managing Waste Oil*

*Managing Used Antifreeze*

*Storm Water Awareness Program (SWAP)*

#### **Checklists:**

*Vehicle & Equipment Maintenance: A Right-To-Know and Waste-Reduction Checklist*

*Groundwater and Environmental Pollution Self-Help*

*Checklist: For Farmsteads and Farm Fields*

*A Guide For Dentists: How to Manage Waste in Your Practice*

*Guide to Household Hazardous Waste*

#### **Additional Comments**

No government agency can hope to impose, induce, or develop the pollution prevention ethic in all areas within its domain unless it utilizes the expertise and experience of other service providers. Contact LLCHD and the other agencies who will be willing to share their experience.

Pollution Prevention (P2) and Toxics Use Reduction (TUR) are the first choice solutions for environmental risks posed to environmental health. These are not complete solutions in every situation. They are a part of an overall waste management hierarchy and complement other components of this strategy. As a health department, LLCHD recognizes the importance of prevention and its role in educating the public to using this tool to improve public health.



# Milwaukee, Wisconsin



## Summary

Milwaukee has a wide variety of pollution prevention programs that focus on expanding solid waste source reduction efforts city-wide, reducing air pollution, and reducing hazardous waste within its own departments. By evaluating various departments use of hazardous materials, the city was able to reduce their generation of hazardous wastes by 75 percent since 1989.

## Program Description

### Impetus for Pollution Prevention Activity

Wisconsin's mandatory recycling law was passed in 1990, leading to the expansion of solid waste reduction efforts on a city-wide basis. In addition, the passage of the Clean Air Act and the reauthorization of the Resource Conservation Recovery Act (RCRA) led to an increased urgency to implement the goals of these pieces of legislation. It should be noted that Milwaukee is in a non-attainment area. Finally, Milwaukee's divisions/bureaus were fairly lax in their management of hazardous wastes since the individual departments were not responsible for the cost of disposal. It was determined that there needed to be a change in the behavior of the departments so that they would become more responsible for the waste that they produced.

The city's initial goals for the program were to increase employee participation in identifying and reducing waste, develop initial facility assessments and

long range compliance programs, and create an on-going focus on pollution prevention throughout all levels of city government.

### Strategy

**In-House** - Initial city efforts were focused upon the completion of an integrated solid waste plan, including recommendations for the city. In-house (internal government operations) pollution prevention activities included on-site assessments by the Health Department, university, and contractor staff, as well as evaluating the internal activities of individual divisions.

Perhaps the most noteworthy pollution prevention initiative, is the city's hazardous waste reduction program. Prior to 1990, city agencies rarely evaluated their usage of hazardous materials. Beginning then, a task force of department representatives and common council members began evaluating the use and reduction of hazardous materials. In 1991,

responsibility for hazardous waste management was centralized in the Department of Public Works and a more thorough accounting and management procedures was implemented. In addition, it was recommended at this time that each division pay for the cost of disposal of these materials. City employees in each department were encouraged to generate creative ideas about how to save on disposal costs, which they did through changing normal practices as well as substituting non-hazardous materials. As a result, between 1989 and 1994, audits of many city facilities indicated that hazardous waste usage had decreased by 75 percent. Further waste reduction efforts were initiated in 1995 based upon these assessments.

## Demographics

### Jurisdiction:

Milwaukee, Wisconsin

### Population:

632,000

### Type:

Urban

### Contact:

Steve Brachman  
Pollution Prevention Specialist,  
University of Wisconsin-Extension,  
1304 S. 70th Street,  
West Allis, WI 53214  
Phone: 414/475-3824  
Fax: 414/475-3777

### Overall Annual Budget of City:

\$1 billion

### Lead Agency Conducting Pollution Prevention Work:

Department of Public Works

## Milwaukee, Wisconsin

In order to conserve energy as well as reduce the amount of hazardous waste, the city converted some of its offices as well as some of the street lighting to sodium-based lights that were more energy efficient and use less hazardous materials. Due to this change, the city was also able to reduce the amount of fluorescent lights that were being utilized due to the higher illumination of the sodium based lights.

As mentioned before, Milwaukee is in a nonattainment area so there was a definite need to improve its air quality. Besides converting some of the Municipal Equipment Division's city vehicles to use cleaner fuels, the city also implemented the use of a Geographical Information System (GIS) for its employees. The GIS is a resource that the city uses to track where its employees live so as to design better commuting routes which would encourage the use of buses, bicycle paths, car pooling, and other forms of environmentally-friendly transit operations. While the system has only been used on a limited basis to track where city employees live, it is hoped that this system can be expanded so as to be used by private industry.

**Outreach** - Technical assistance efforts to business were primarily limited to implementing the recycling program. However, periodic task forces and work

groups have been formed to deal with very small quantity generators and special waste problems such as florescent lights. The city also conducted consumer education which focused primarily on "smart shopping" as a way to reduce solid and hazardous waste. Recycling education has been on-going since 1989 and has included a major public relations and education effort directed at yard and solid waste reduction. Household hazardous waste collection programs led to an aggressive educational effort, including teaching people the hazards of using lead-based paints. Milwaukee also conducted paint exchanges with nonprofits which have used the paint for neighborhood projects and graffiti removal.

To date, the City of Milwaukee has been more successful in implementing internal pollution prevention efforts than it has been with external activities. However, even more activities should be implemented.

## Resources Used

### Expenditures and Funding Sources

The city currently has no separate budget breakout for P2 activities, although this is something that could

### Staffing Resources Used

Staff #	New/Existing	Department	Time Spent	Activities
3	existing	Public Works	100%	recycling, legislation, hazardous waste, contaminated lands, employee commute (GIS), stormwater management
1	existing	City Development	25%	contaminated lands
4	existing	Health	75%	Industrial hygiene, business assessment, vector control
1	existing	Attorney	20%	contracting, legislative review
2	existing	Engineers	100%	storm water management

be done. Approximately \$10 million is allocated, annually, including the cost of recycling. Funds are received through the State Department of Natural Resources (DNR) recycling grant, the State DNR stormwater management grant, and the general tax fund.

### **Written Materials and Technical Assistance Sources Used**

The city relied on a variety of technical resources including EPA's P2 audit materials for schools and state and local government materials, including information from Erie County, NY. The University of Wisconsin (UW)-Extension also serves as a clearinghouse for pollution prevention material and the city was able to use some of its materials on hazardous waste. Also, the city received information from other non-profit organizations including Citizens for a Better Environment.

### **Public or Private Sector Partners**

The UW-Extension, consultants, DNR, and private recyclers all serve as partners to the program.

## **Outcome and Accomplishments**

### **Assessment of Effectiveness**

The city was very successful in implementing a consumer recycling and waste reduction program for solid waste. In addition, employee education has improved, but not to the point where all employees consider P2 to be part of their responsibility. Less successful has been the identification of on-going problems and movement

towards solutions, with budgetary limitations being a major factor. Since the city cannot always show a profit from pollution prevention, some long term activities have not been implemented, such as a more aggressive business waste reduction effort. While the effort has begun, there is still a long way to go.

### **Community and Department Gains**

Significant financial savings have occurred from waste reduction, energy conservation, and toxics reduction. Better public relations material was developed due to the recycling program. General employee awareness and support was increased. Legislative recognition also has improved, especially at the state level.

### **Lessons Learned**

Obtaining on-going political support is a challenge. The establishment of the environmental policy coordinator position in 1992 was a critical breakthrough for the program.

Recognition of individual employee effort is still lacking, but improving. Support from the mayor has assisted in this effort.

Coordination among departments has improved, particularly with the establishment of the environmental liaison work group. However, no formal recognition of this effort has occurred.

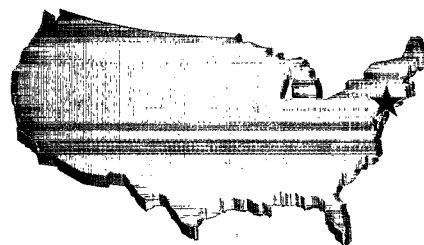
Financial resources have been significantly augmented by state grants. Lobbying for these resources has been critical to the success of implementing the P2 program.

### **Pollution Prevention Materials Available From Jurisdiction**

*Cash for Trash* (a precycling guide)

*Just Say Mow* (general brochure and videotapes)

# Newark, New Jersey



## Summary

The City of Newark aggressively promotes a wide variety of efforts to reduce solid and hazardous waste as well as conserve water and energy. Through the city's efforts to educate consumers and retailers, Newark has increased the awareness of its citizens on the importance of pollution prevention and waste minimization.

The City of Newark also realizes the importance of creating a sustainable community. Their slogan "Think Globally, Act Locally!" is evident in all of their environmental programs and publications.

## Program Description

### Impetus for Pollution Prevention Activity

The City of Newark has had a significant solid waste disposal problem since mid-1987 when its local landfills were closed. Disposal costs increased from approximately \$25 per ton to more than \$100 per ton due to the need to transport waste to out-of-state landfills. As a result, source reduction became a priority to Newark's leadership. The goals of the city were to reduce solid waste generation by a minimum of 10 percent, as well as recycle a minimum of 60 percent of the municipal solid waste stream.

### Strategy Water Conservation

*In-House Activities:* The City of Newark has imple-

## Demographics

### Jurisdiction:

Newark, New Jersey

### Population:

275,221

### Type:

urban

### Contact:

Frank Sudol, Chief of Research & Program Development, City of Newark,  
Room 410, 920 Broad Street, Newark,  
New Jersey 07102  
Phone: 201/733-4356  
Fax: 201/733-4772

### Overall Annual Budget of City:

\$520,000,000

**Lead Agency Conducting  
Pollution Prevention Work:**  
Department of Engineering

mented a water saving strategy within the municipality's infrastructure with the use of pitometers that search for water leaks. It has been estimated that after the leaks have been repaired, an older city such as Newark, can conserve up to 20 percent of the original amount of water used.

*Consumer Education:* To save water, Newark has distributed free water conservation kits to many homeowners. The kit includes flow restrictors and toilet tank water saving devices. The city's goal is to install these devices in every household.

Water conservation can save not only water resources, but also energy used to process both the water and what in most cases will become sewage. Water conservation can be achieved in both buildings and within a municipality's infrastructure. The

conservation of filtered water can save energy at the source, while reducing infiltration inflow to sanitary and combined sewers.

### Energy Conservation

Energy conservation can be achieved by updating less efficient fluorescent, incandescent, and mercury vapor street lights owned and maintained by the local utility company to new city-owned high pressure sodium units. For example, over the course of four years, the City of Newark converted 16,000 such lamps to new, energy efficient light fixtures saving the city about \$1.3 million a year in electricity cost, while providing approximately twice the illumination of the old lights and reducing polluting mercury emissions to the environment.

Energy conservation within municipal buildings can be achieved in many cases with no upfront investments, by working with energy management firms, which will make the initial capital investment to achieve desired energy conservation goals. The city saves energy, and thus money, and the energy management firm shares on the energy cost savings. Such programs have been implemented in Newark City Hall and the municipal management complex.

### Reuse

*Editor's note: Although reuse is not pollution prevention because it does not reduce the amount of material produced at the source, it is a better solution than recycling. Through the extension of the useful life of a product fewer resources are used and discarded.*

**Education to Consumers and Businesses:** One program the city promoted to increase the usefulness of materials was its new guide entitled *Second Chances: The Planet Newark Guide to Donating Unwanted Goods* which was initiated to coincide with Earth Day activities in April, 1995. In addition to the guide's major goal of waste reduction, the guide also allows charitable organizations to better serve Newark residents. "Second Chances" contains a comprehensive listing of 60 Newark organizations that accept donations of used household and office goods.

The guide was created to help reduce the amount of trash thrown away in Newark by getting usable items that one person, or company, might discard into the hands of others who would consider the items to be valuable. "Second Chances" is designed to provide residents and businesses with information on local organizations that would appreciate the donation of these items.

The categories of materials listed in the booklet are: appliances, automobiles, bicycles, books, building materials, car seats for babies and children, clothing to be reused, clothing to be recycled as rags, computer supplies, computers, dining ware (dishes, plates and eating utensils), office furniture, household furniture, and other items.

The guide tells readers how to use its "Index to Materials Accepted for Donation" and the "Listing of Organizations Accepting Donations of Used Goods" so they will be encouraged to donate. "Second Chances" also includes a questionnaire to be filled out by organizations not in this year's guide that wish

to be in next year's guide. The guidebook also highlights the fact that donations of used goods are often tax deductible, though only an accountant or tax preparation service can provide complete information on each particular donation.

### Waste Minimization and Household Hazardous Waste Reduction

**Education to Consumers:** The program "Second Chances" also has a section dedicated to "Other Things You Can Do To Reduce Waste." This section includes tips for reducing waste by purchasing products that use less packaging, reusing things such as margarine tubs with resealable lids, and avoiding disposable products. The City of Newark also publishes a document entitled *Put the Lid on Garbage* in Newark which is a recycling guide distributed to its citizens. The guide educates consumers on how to be an environmentally smart shopper. The guide explains how a shopper should give preference to items that: 1) do not use excessive packaging, 2) are not disposable, 3) are made of recyclable material, 4) are reusable, and 5) are recyclable.

The city has also published *The Newark Resident's Guide to Household Hazardous Waste* which outlines the dangers of household hazardous materials as well as teaches consumers ways to reduce their use of these materials. The guide gives environmentally friendly alternatives to commonly used household materials such as cleansers, drain cleaners, batteries, paints, and pesticides.

**Education to Retailers:** Another initiative to reduce the amount of packaging used by the food industry was announced on April 22, 1989. Mayor Sharpe James announced a new packaging ordinance which bans the use or sale of polystyrene and polyvinyl chloride for use in retail food establishments unless a sustained recycling rate of 60 percent could be demonstrated. This effectively caused retail food establishments to switch to reusable or biodegradable material. Through this initiative, the City of Newark hoped to increase retailers awareness of the environmental impact of these materials so that, in the future, they would make more environmentally responsible decisions.

In addition, the city, through its Chamber of Commerce, also distributed *The Newark Guide to Source Reduction and Buying Recycled in the Workplace* to all of its businesses to educate them further.

## Resources Used

### Staffing Resources

The Newark Office of Environmental Services has a professional staff of five individuals. A portion of their staff time is devoted to P2 work.

### Expenditures and Funding

**Water Conservation:** The kits are commercially available. However, Newark has modified the kits to display the city's logo along with and some other environmental information. The city charges its citizens the cost of the unit which is approximately \$1.50 per kit.

**Energy Conservation:** The city replaces lights with more environmentally preferable one as a function of routine maintenance at no additional cost.

**Reuse:** "Second Chances" Booklet:

Preparation: Mailing lists, questionnaire development, solicitation materials, artwork, and typesetting for "Second Chances". **TOTAL: \$9,107.54**

Printing: 3,200 copies of the 40-page book were printed, with a four-color cover and a two-color interior; Equinox 100 percent recycled paper was used with 50 percent postconsumer content. **TOTAL: \$5,581.60**

Funding for this initiative was provided out of the city's operating budget.

**Waste Minimization and Household Hazardous**

**Waste Reduction:** Both the "Hazardous Waste Guide" and the "Put the Lid on Garbage" booklets cost approximately \$.50 each for printing and \$.30 for mailing. The City mailed these guides to 90,000 households.

### Written Materials and Technical Assistance Sources Used

Newark used a variety of EPA documents, state materials, and materials from other local governments.

## Public or Private Sector Partners

Newark's business community as well as nonprofit organizations, churches and residents have all been instrumental in working together to make the "Second Chances" program successful.

## Outcome and Accomplishments

### Assessment of Effectiveness

In the area of energy conservation it is estimated that the city saved \$1.3 million on electricity. However, quantification of source reduction is difficult. Newark is striving to achieve a significant level of reduction through source reduction initiatives.

### Community and Department Gains

Newark realized a reduction in pollution, less land-filling, excellent publicity, and more cost-effective municipal solid waste management.

### Pollution Prevention Materials Available From Jurisdiction

Below are just a few of the documents that are available.

*Second Chances - The Planet Newark Guide to*

*Donating Unwanted Goods*

*Water Conservation Kit*

*Put the Lid on Garbage in Newark*

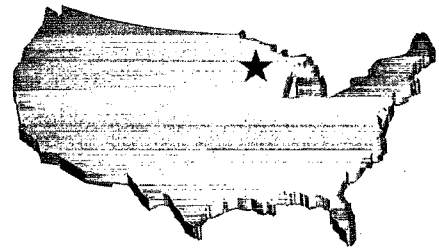
*The Newark Resident's Guide to Household*

*Hazardous Waste*

*The Newark Guide to Source Reduction and Buying*

*Recycled in the Workplace*

# Olmsted County, Minnesota



## Summary

Olmsted County has a strong belief in an integrated solid waste management system. Pollution prevention is central to the operation of this integrated system. Simply put, without a reduction in the amount and toxicity of Olmsted County's solid waste, its disposal facilities would not meet federal and state requirements.

## Program Description

### Impetus for Pollution Prevention Activity

Changes in federal and state requirements for waste-to-energy facilities and landfills propelled Olmsted County to find ways to reduce the amount and toxicity of waste being disposed. State and federal regulations required the continued reduction in the air emissions of cadmium, lead, and mercury waste. In particular, the county was concerned with both the toxicity and the amount of solid waste generated by the business sector.

Another factor contributing to the creation of a pollution prevention program was Olmsted County's commitment to an integrated approach to solid waste management. The county has a system that includes recycling, composting, household hazardous waste,

technical assistance (as well as assistance in other environmental management areas). This assistance includes on-site visits and waste audits that identify ways businesses can reduce the amount and toxicity of their waste. The abatement staff also answers telephone inquiries. The program is currently developing a database to track on-site visits and waste stream analysis and is attempting to find a correlation between types of businesses, SIC codes, and

waste-to-energy, and landfilling. To complete a total integrated solid waste management system, pollution prevention and source reduction programs were added in 1990 and are operated under the Public Works Department. The initial goal of the pollution prevention program was to work with Olmsted County departments and private businesses to analyze their waste streams and determine how to reduce the amount and toxicity of the materials being disposed.

### Strategy

#### Pollution Prevention Activities With Local Business

To determine the business sector's interest and needs related to general business waste management and pollution prevention, Olmsted County conducted a comprehensive business survey. The county used information generated by the survey on business' awareness, attitudes, and behavior to design its pollution prevention program.

The waste abatement staff provides pollution prevention

## Demographics

### Jurisdiction:

Olmsted County, Minnesota

### Population:

110,000

### Type:

Urban and rural

### Contact:

Jack Stansfield  
Waste Reduction Coordinator  
Olmsted County Public Works  
Department  
2122 Campus Drive SE  
Rochester, MN 55904-4744  
Phone: 507/285-8231  
Fax: 507/287-2320

### Overall Annual Budget of County:

\$98.3 Million

### Lead Agency Conducting Pollution Prevention Work:

Olmsted County Public Works  
Department

their waste streams. Special emphasis is being placed on the identification of businesses that produce cadmium, lead, and mercury waste.

The program staff also delivers the Olmsted County 1995 Industrial Solid Waste Management Plan to businesses. When delivering the plan, staff explains to business representatives how much and what types of waste can be handled at the disposal facilities in a proper and cost-effective manner. Staff also takes this opportunity to show these businesses how they can realize savings through the implementation of pollution prevention and still meet the requirements of the plan.

The program's latest initiative is a newsletter that is mailed to 3,200 businesses in the county. The newsletter provides pollution prevention and waste reduction tips, proper disposal methods of problem materials, and Minnesota Waste-Wise Program updates. The newsletter also promotes the Very Small Quantity Generator (VSQG) Program. VSQGs are businesses that produce less than 220 pounds (about 22 gallons) of hazardous waste per month. Olmsted County will expand its hazardous waste collection system in 1996 to accept limited quantities of hazardous waste materials produced by VSQG's. Currently, the county accepts any quantity of mercury, lead, and cadmium from large-sized businesses free of charge to reduce the amount of these metals in the waste stream.

### Internal County Activities

The waste reduction coordinator also works with the Olmsted County Risk Management Department to conduct training sessions for county employees and the Rochester Public Works and Parks Departments. These sessions explore new ways to use less toxic materials in the work of the departments.

## Resources Used

### Staffing Resources

The Waste Abatement Program is run by three full-time staff which include a waste reduction coordinator, a recycling services coordinator and a household hazardous waste coordinator. The equivalent of one-and a-half staff members actually work on pollution prevention activities. The waste reduction coordinator works full-time on these activities.

These duties have recently been included in the recycling services Coordinator's work plan. Both staff persons are from the Solid Waste Division of the Public Works Department.

### Expenditures and Funding Sources

The tipping fees from the Olmsted Waste-to-Energy Facility (\$82.65 plus tax) supports all of Olmsted County's waste management programs and facilities, including pollution prevention activities. Olmsted County also received a \$12,320 grant in 1994 from the Minnesota Office of Environmental Assistance solely for pollution prevention programming in the county. Part of that grant also assisted three neighboring counties with technical business assistance programs.

### Written Materials and Technical Assistance Sources Used

The following resources were very helpful in the development of the county's pollution prevention efforts:

Minnesota Pollution Control Pollution Prevention Conference;  
The National Pollution Prevention Roundtable;  
EPA's *Facility Pollution Prevention Guide*; and  
resources from other states.

### Public or Private Sector Partners

Olmsted County is working with the Rochester Chamber of Commerce to promote pollution prevention and source reduction activities with its members. The chamber is developing a special manufacturing committee within the organization to address the specific needs of these members.

## Outcome and Accomplishments

### Assessment of Effectiveness

The solid waste management plan is more effective since the source reduction and pollution prevention components have been added. The first few years were devoted to working on mandatory recycling and trying to learn more about source reduction and pollution prevention.

The program has since focused and has gathered



## Olmsted County, Minnesota

the necessary tools and staff to do meaningful pollution prevention work. Although it will probably be a year before results can be quantified, businesses support the county's efforts in working with them. Some businesses used this collaboration as a marketing tool.

### **Community and Department Gains**

The program has had a positive public relations effect on the businesses in Olmsted County. The newsletter also provides an efficient way to get basic information to the community and provides local contacts for more in-depth information on the various subjects.

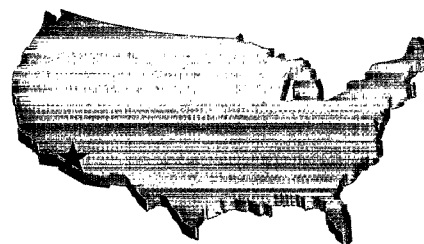
### **Lessons Learned**

Two major problems the program has had to overcome were a lack of a program focus and not having a network of people with experience in this field. Initially, primary pollution prevention needs and opportunities among business and effective methods of disseminating such information to local companies were unclear. The comprehensive survey went a long way in solving this issue.

### **Pollution Prevention Materials Available From Jurisdiction**

Copies of *Trash Talk* July 1995 newsletter.

# Phoenix, Arizona



## Summary

The City of Phoenix is the seventh largest U.S. city and covers 450 square miles. The business community is comprised mostly of small businesses with a few large industries. The purpose of the city's pollution prevention program is to develop best management practices (BMPs) for industrial and commercial facilities that discharge one or more of the pollutants for which the city is regulated. The program also aims to form a public education effort directed at changing consumers' and residents' chemical products usage.

## Program Description

### Impetus for Pollution Prevention Activity

The program was started February 1993 and is ongoing.

National Pollutant Discharge Elimination System (NPDES) permits (effective 12/92) required the city to develop and implement through its Industrial Pretreatment Program, a Pollution Prevention (P2) Program. The program implements BMPs at selected industrial and commercial facilities in order to reduce the volume and concentration of pollutants discharged into the Wastewater Treatment Plants (WWTPs) and, ultimately into the Salt River, the discharge point of the WWTPs. This program is also charged with developing and implementing a public education effort directed at

## Demographics

### Jurisdiction:

City of Phoenix, Arizona

### Population:

1,060,000

### Type:

Urban

### Contact:

Jenée Gavette, P2 Coordinator,  
City of Phoenix Water Service  
Department,  
2303 W. Durango  
Phoenix, AZ 85009,  
Phone: 602/262-6997  
Fax: 602/534-7151

### Overall Annual Budget of City:

\$1.4 billion

### Lead Agency Conducting Pollution Prevention Work:

Water Services Department

changing consumer and residential chemical product usage, again, for the purpose of reducing pollutant contributions to the WWTPs. To facilitate the development and implementation of the P2 program, in February 1992, the city council authorized an Intergovernmental Personnel Act (IPA) assignment with the EPA Region 9. This IPA assignment, wholly funded by the city, provides for an EPA official to be assigned to the Pollution Control Division of the Water Services Department and is responsible for developing and implementing the P2 program.

Through a local limits study and a chronic toxicity identification evaluation, the city determined that the pollutants of greatest concern that require reduction in the amounts discharged to the WWTPs are mercury, arsenic, lead and copper, and the pesticides malathion and diazinon. For the metals, the city

concluded that it must determine what type of businesses discharge these pollutants and the opportunities for reduction (point source control). The P2 program, identified by SIC Code, those businesses located in Phoenix that were likely to use the pollutants so that on-site inspections and wastestream sampling could be conducted to determine: (1) whether or not they actually used the pollutants; (2) whether or not the pollutants are actually discharged to the WWTPs and at what levels, and (3) the feasibility and benefit of implementing BMPs at businesses that discharge measurable levels of pollutants of concern. For the pesticides, the city determined that it must identify who in the community uses the pesticides, why they use them, and

how they dispose of them, so that an educational campaign informing consumers of the ramifications of these pesticides uses and alternatives could be implemented.

The program focuses on:

- purchasing,
- publicly owned treatment works (POTW),
- consumer education, and
- technical assistance to businesses (on an all inclusive, multi-media scale).

## Strategy

### Point source Control-

#### *Mercury:*

During 1993, the P2 program developed an inventory of 1,591 potential mercury dischargers; of these, 424 were inspected. For industry types that had several facilities (i.e., dental offices, body shops, photo finishers), a representative number were inspected, between eight and 47 percent, depending upon the industry type. Wastewater samples were collected from 43 dischargers which met the following criteria:

- (1) likely had mercury on site;
- (2) discharged to the sanitary sewer; and
- (3) had an adequate sampling point.

Analytical results of the grab samples, using a detection level of 0.0002 mg/l, indicated that dentists were collectively the largest discharger of mercury. Therefore, during 1994, four days of composite sampling were conducted at six stand-alone dental facilities to obtain an adequate representation of dentists' mercury contribution to the WWTPs. The analytical results of these composite samples, using a detection level of 0.0002 mg/l, indicate measurable levels of mercury are discharged from dental facilities (report available). In addition to dental facilities, analytical laboratories were also identified as discharging measurable levels of mercury.

During 1995, the P2 program will work with the local chapter of the American Dental Association to identify the best and most practical method of reducing the levels of mercury discharged to the WWTPs. It also will also form a workgroup to study solutions to the problem of mercury discharges. In addition, the P2 program will work closely with other municipalities throughout the nation that have similar problems so that all the BMP alternatives are identified and evaluated.

#### *Arsenic:*

During 1994, the P2 program developed an inventory of 572 potential arsenic dischargers, of these, 224 facilities were inspected. Types of facilities included, but were not limited to veterinary services, glass products, electropolishing and electroplating, semiconductors, electronic component manufacturers, medical clinics, and printed circuit boards. Wastewater grab samples were collected from seven dischargers which met the sampling criteria described above. Analytical results of the grab samples from the mercury survey indicated that some analytical laboratories discharge measurable levels of arsenic. However, measurable levels of naturally occurring arsenic are also found in the potable water supply. Therefore, further research and analysis of laboratories and the potable water supply will be conducted during early 1995 to determine whether developing and implementing BMPs at laboratories will be feasible and productive.

#### *Lead and Copper:*

During 1995, the P2 program developed an inventory of 1,820 potential lead and copper dischargers, a representative portion of which will be surveyed and sampled during the latter part of 1995. Types of facilities include, but are not limited to, painting, electrical work, bottling, wood products, commercial printing, sheet metal work, industrial and commercial machinery, and automotive repair and services.

## Education and Outreach:

### *Industrial Outreach/Education:*

During 1993, the P2 program developed materials to support a P2 education/outreach program directed at industrial and commercial facilities located in Phoenix. The materials include brochures, posters, P2 promotional items (cups, post-it notes, and magnets) and graphics which can be used in a variety of settings and forums. The graphics feature real Phoenix companies that have implemented P2 measures and the resulting benefits. The P2 Program uses the "Making Phoenix Shine" logo and the "Pollution Prevention Pays" theme.

The "Pollution Prevention Pays" game—an interactive, "Jeopardy"-like question and answer game—was also developed and built by P2 Program staff. The game features several categories, including general P2, radiator shops, paint formulating, metal finishing, commercial printing, chemical manufacturing and formulating, printed circuit board manufacturing, photo processing, plastic manufacturing, fleet maintenance,

equipment maintenance, and laboratories, all of which have related P2 questions designed to disseminate P2 knowledge. The game and materials are taken to environmental conferences and industrial trade shows where visitors to the city's P2 program booth can test their P2 knowledge.

The P2 program also utilizes water conservation literature developed by the Water Services Department's Water Conservation Program. In addition, the P2 program provides speakers at various training events and conferences.

### *Community Outreach/Education:*

During 1994, the P2 program developed materials, a "Be a Pollution Solution" game and P2 promotional items directed at residents and consumers. The P2 Program utilizes the "Making Phoenix Shine" logo and the "Be a Pollution Solution" theme. Materials, games, and promotional items that have been developed and utilized are described below:

- The "Be a Pollution Solution" mascot—a happy coyote that signifies life in the desert and encourages the public to "Be a Pollution Solution";
- flyers describing household hazardous products, their proper use, alternatives, and proper disposal in the following categories: kitchen, bathroom, workshop, hobby and miscellaneous, garage, and garden. The flyers feature the "Be a Pollution Solution" mascot and the city's household hazardous waste hot-line phone number;
- large placards that display, by category, subsets of the information described in flyers;
- a display of real household hazardous products and their alternatives;
- the "Be a Pollution Solution" game, is similar to the "Pollution Prevention Pays" game, except with the following question and answer categories: general pollution prevention, water conservation, product substitution, environmental awareness, household hazardous wastes, pesticides, pollution prevention in the office, and children and students targeting three age groups;
- P2 promotional items that feature the "Be a Pollution Solution" theme, the "Making Phoenix Shine" logo, and the happy coyote mascot include: squeeze bottles, yo yos, frisbees, buttons, pencils, pencils, screwdrivers, bag clips, refrigerator magnets, and balloons. These promotional prizes are awarded to players of the "Be a Pollution Solution" game. The materials and game are taken to various community events where P2 information is distrib-

uted and visitors can have their P2 knowledge tested. The P2 program also utilizes water conservation literature developed by the Water Services Department Water Conservation Program.

### *Pesticides Campaign:*

Currently, research is being conducted to determine where and how the pesticides Malathion and Diazinon are being used in the community. Once this is determined, the P2 Program will develop and implement a very focused publicity campaign educating the public on the proper use of these pesticides, their dangers, alternatives, and proper disposal practices (through 1995). The campaign will likely be multi-media—print, TV, radio and one-on-one discussions with members of the public.

### **Future Goals:**

By the end of 1997, the P2 program plans to:

- develop and implement of a "Waste-Wise" type program wherein the city challenges businesses to establish waste reduction goals and voluntarily implement pollution prevention practices to achieve goals. (Recognition from the city and publicity will be the reward.);
- adopt-a-school program or a similar program in which P2 Program staff visit classrooms, develop curriculums, etc.; and
- form of a technical assistance program to conduct P2 audits at businesses and assist with implementation of P2 measures.

## Resources Used

### **Staffing Resources**

The program is staffed by one pollution prevention program coordinator who focuses on P2 development and implementation and three Senior Water Quality Inspectors who conduct survey/inspections, outreach, and issue permits. All four staff members dedicate 100 percent of their time to P2.

### **Expenditures and Funding Sources**

Personnel: \$200,000; Program efforts (graphic artist, printing, exhibit systems, promotional items, P2 games): \$8,000; Registration fees: \$1,500  
The P2 program is entirely funded by sewer use fees.

### Written Materials and Technical Assistance Sources Used

EPA documents including case studies and guidances, state materials and materials from other local governments, including pamphlets, brochures, and fact sheets.

### Public or Private Sector Partners

- Arizona Department of Environmental Quality (ADEQ);
- Arizona Strategic Alliance (EPA Region 9, ADEQ, Arizona Public Service (utility company);
- Arizona State University;
- Cities of Scottsdale, Peoria, Glendale, Tempe, Mesa, and Town of Gilbert, Arizona;
- Maricopa County, Arizona;
- City of Phoenix, Office of Environmental Programs; and
- City of Phoenix Public Works Department

## Outcome and Accomplishments

### Assessment of Effectiveness

The city of Phoenix's outreach/education program has been extremely successful. Information booths are

visited by hundreds of people some of whom have requested games to be used at various forums. The interactive approach has proved to be very positive. Developing BMPs for dentists aimed at reducing mercury discharge will be challenging and, if successful, will result in a reduction of the levels of mercury discharged to the sanitary sewer system. The P2 program has also developed an automated library which includes more than 500 publications on P2 related materials and literature.

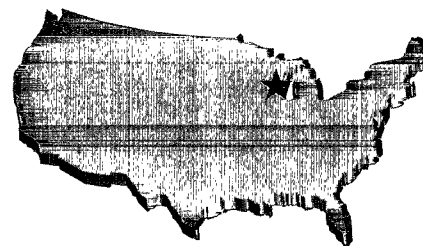
### Community and Department Gains

The city and department have demonstrated environmental leadership and have fostered good will between the City of Phoenix and the community. The pretreatment program has been traditionally regulatory; however, the inclusion of the P2 program provides the customer with technical and educational assistance resulting in good customer service— a primary goal of the city.

### Lessons Learned

The more assistance/guidance you can get from other communities or municipalities, the better. Networking is also very important. Get to know your procurement people and procurement procedures—you'll need them.

# Rock County, Wisconsin



## Summary

Rock County Government and the University of Wisconsin-Extension have teamed up to develop a proactive, collaborative, and participatory pollution prevention initiative aimed at the business and industrial sector of the community. These activities have resulted in 62 tons of hazardous waste reduction and a reported savings of \$398,292 by 10 firms.

## Program Description

### Impetus for Pollution Prevention Activity

The 1989 Wisconsin Act 325 created the Solid and Hazardous Waste Education Center (SHWEC) as an arm of the University of Wisconsin-Extension. A key purpose was to bring industry and business into a new era of proactive and participatory environmental management through research, education, and outreach.

The Pollution Prevention Act of 1990 caused state and federal regulators to gradually integrate pollution prevention concepts into their activities, resulting in some voluntary compliance programs which successfully encouraged industry to prevent pollution and

## Demographics

### Jurisdiction:

Rock County, Wisconsin

### Population:

142,000

### Type:

Urban

### Contact:

**Joseph Moskal**, Community Development Agent,  
University of Wisconsin-Extension,  
Rock County Courthouse,  
51 S. Main St.,  
Janesville, WI 53545  
Phone: 608/757-5695  
Fax: 608/757-5725

**David Liebl**, Pollution Prevention Specialist,  
Solid and Hazardous Waste Education Center, University of Wisconsin-Extension,  
610 Langdon St., Madison, WI 53703  
Phone: 608/265-2360  
Fax: 608/262-6250

**Overall Annual Budget of County:**  
\$119,927,760

### Lead Agency Conducting Pollution Prevention Work:

University of Wisconsin-Extension,  
Solid and Hazardous Waste Education Center

hazardous waste at the source.

In the fall of 1992, SHWEC embarked on its pollution prevention efforts in cooperation with county government through the University of Wisconsin-Extension's Rock County office by targeting large quantity generators of hazardous waste. Over 50 percent of the hazardous waste companies operating in Rock County's produce such waste through a coating process. Solvent cleaning, metal finishing and fabricating, product formulation and cleaning represent the remaining processes that produce hazardous waste. County officials were concerned about several industrial hazardous waste spills' economic and environmental implications. Shared leadership was provided by a campus-based pollution prevention specialist and the local community development agent (agent) in a coordinated outreach effort to build a local program. The University-Extension and county cooperative effort seeks to increase industry awareness of pollution prevention options and to generate referrals for on-site pollution prevention opportunity assessments. These assessments are used to develop waste reduction recommendations.

## Strategy

SHWEC employs a methodical pollution prevention strategy that places emphasis on building trust and support with local busi-

## Rock County, Wisconsin

nesses and industry through outreach and education. Rock County believes this approach is essential to getting the message out to the community and gaining the support of business for adopting pollution prevention techniques.

The first step in this process is the *identification of the industrial clientele*. There were several sources of information used to identify the existing industrial base at the county level. Among those of the greatest use were the local and regional manufacturing directories. Further sources used were the Wisconsin Manufacturers and Commerce Directory of Manufacturers, the SHWEC-County Directories of Hazardous Waste Generators, and the Department of Industry, Labor, & Human Relations unemployment compensation listings. A SHWEC specialist assisted the agent in compiling this information from these sources in both written and computer formats for mailings and other outreach activities.

The next step was *prioritizing the outreach effort*. Targeting those companies that could best be served by an outreach effort boosted agent effectiveness and increased the likelihood of success. A SHWEC specialist helped the agent to determine which industries were most likely to benefit from pollution prevention by reviewing the county hazardous waste directory and the information on company products contained in the Wisconsin Manufacturers and Commerce Directory. Fifty-seven companies with waste from manufacturing processes and a proven potential for pollution prevention (based on companies with similar size and manufactured products in the U.S.) were identified as prime candidates.

*Establishing local support* was central to the success of the outreach effort. It was important to identify those persons in the county who could provide the agent with the political and organizational support to carry out the outreach effort. The agent already had contact within the manufacturing community and this led to the formation of an advisory group made up of individuals from local businesses. Other good contacts and supporters were the Local Emergency Planning Committee and local solid waste managers because they were already working with the major businesses and hazardous waste generators in the county.

*Preliminary publicity* served to introduce the project in a positive atmosphere. The Rock County project was kicked off with a press conference coinciding with the Governor's Higher Education and Business Partnership Week. The press conference

included county, industry, and University representatives. It provided a focal point of interest in the community and established a firm starting point and timetable for outreach activities. Periodic news releases describing progress and success stories also kept interest focused on the project. The releases had the two-fold advantage of showing progress to county committee members, and informing companies of activities prior to first contact with them.

A special brochure was developed for the Rock County project describing the benefits of pollution prevention and the services offered by the University. This brochure, along with the SHWEC technical assistance brochure, the SHWEC fact sheet on understanding pollution prevention assessments, and the SHWEC pollution prevention guide were the essential outreach materials for face-to-face meetings. Additional materials also included news articles about waste related issues and letters to trade organizations and local businesses that lent credibility to Extension's involvement with hazardous waste reduction.

The agent next *contacted companies directly*, which was essential to the successful industrial extension outreach. Companies that had been identified as having a high potential for waste reduction based on their waste streams and manufacturing processes were approached first by letter, then phone, followed by a personal visit. The objective of this approach is to use the letter to "get a foot in the door" by summarizing the program. The followup phone call is a way to explore potential interest at the firm and to arrange a person-to-person meeting. The meeting was used to present the outreach materials and explain both the project and the benefits of pollution prevention in detail, as well as to better understand the issues of concern to the company.

The point of contact within the company was generally an influential person likely to be very concerned with hazardous waste at the facility. The owner, CEO, plant manager or environmental/safety coordinator were typical potential contacts. The goal of the contact was to increase the awareness about the benefits of pollution prevention as a business strategy and to encourage direct company contact with SHWEC for a free non-regulatory pollution prevention assessment to be conducted on-site.

A SHWEC specialist conducted on-site pollution prevention opportunity assessments during the intensive outreach effort in Rock County. The agent requested that interested companies contact SHWEC directly so the specialist could schedule the assess-

ments. The agent sometimes joined the specialist for one or more of the first assessments. This gave the agent an opportunity to better understand what happens during an initial assessment. The specialist then tours the facility noting ways to create savings through pollution prevention. After the tour, the specialist meets with the company representative to clarify things that were observed during the tour. Follow-up reports are sent to each firm. Specific alternatives are presented to help minimize or eliminate waste streams and to cut material and disposal costs. The specialist provides the agent with a copy of the pollution prevention assessment report to keep the agent informed about what services are being provided. Nineteen assessments have been performed to date.

*Follow-up evaluations of industry contacts* were an essential part of the county-based outreach effort. A face-to-face survey, measured what progress a company had made since receiving the pollution prevention assessment report. This helped to fine-tune the outreach effort, maintain a relationship with the firm, give the company the opportunity to request additional assistance, help the company to recognize its own achievements, and provide justification of agent's activities to county officials. Successful efforts were publicized and used to build the case for pollution prevention activities in other firms. This was a good way to keep the program alive and in high profile over the long haul.

*Outreach To Other Companies:* The Rock County Pollution Prevention Project also sought to provide access to information and training on pollution prevention to other waste generators in the area. A countywide mailing that originated from the Rock County Extension Office provided copies of the Wisconsin Department of Natural Resources (WI-DNR) Small Quantity Generator Handbook and included information on SHWEC services. In this way, non-complying businesses that had been missed by state regulatory programs were made aware of their responsibilities under Wisconsin law and other small businesses were provided with more complete regulatory information and access to SHWEC for additional waste reduction services. Some of these businesses proved to be excellent candidates for source reduction/recycling programs as well. The SHWEC specialist assisted in identifying companies that had not reported to WI-DNR but might be expected to generate hazardous waste.

## Resources Used

### Staffing Resources

Two staff conduct Rock County's pollution prevention activities. The community development agent spends 25 percent of his county time on pollution prevention activities. The pollution prevention specialist spends 100 percent of his time on pollution prevention activities. The specialist has statewide responsibilities and spends approximately three "specialist" days for each on-site assessment conducted in Rock County.

### Expenditures and Funding Sources

Cost estimates of the pollution prevention initiative are calculated based on time spent. Each pollution prevention opportunity assessment performed cost three days of the specialist's time ( $19 \times 3 = 57$  days). An additional ten days were spent on waste forums, strategy sessions, workshops, etc. The agent spent approximately 25 percent of his time on the project ( $240 \text{ days} \times 25 \text{ percent} = 60 \text{ days}$ ). Materials developed specifically for the project were minimal—probably less than \$400. The real cost is time.

Community Development Agent (25 percent)	60 days
Pollution Prevention Specialist (28 percent in Rock County)	67 days

### Written Materials and Technical Assistance Sources Used

In developing the Rock County pollution prevention program, numerous and diverse set of materials were used. The Program staff relies on various university fact sheets, materials from non-profit organizations, such as the Marathon County Hazardous Waste Cooperative, and sources/contacts from equipment vendors.

### Public or Private Sector Partners

Rock County's pollution prevention efforts represent a collaboration between University of Wisconsin's Solid Waste Education Center and the Rock County Extension.



## Outcome and Accomplishments

### Assessment of Effectiveness

In Rock County, 19 businesses participated in Extension pollution prevention opportunity assessments which offered specific, practical suggestions for reducing or eliminating hazardous waste. The assessments were conducted from October 1992 through February 1993. Follow-up with the participants has shown that 75 percent of the suggestions are being implemented. This has resulted in:

Hazardous waste reduction	132,000 pounds
Total investment in waste reduction	\$1,826,130 (13 firms)
Savings attributed to waste reduction	\$398,292 (10 firms)
New profits from customers gained from non-hazardous manufacturing technology	\$80,000 (1 firm)
A belief that pollution prevention strategies have improved the work environment	(12 out of 18 firms)

Overall in Rock County, 31 hazardous waste generators have sought out Extension educational assistance to better manage their hazardous waste; plus an additional 62 firms are working with the University of Wisconsin-Extension to reduce costs through source reduction strategies or to implement recycling programs. There are a total of 93 companies working with the project to improve their waste management.

**County Industrial Waste Forum:** In Rock County, the close interaction between the county agent and the local businesses also led to the establishment of a forum for Rock County waste generators. Organized and facilitated by the Rock County Extension, this forum provides an opportunity for businesses that generate hazardous waste to meet on a regular basis to discuss with their peers new technologies, waste reduction strategies, regulations, and successes or difficulties in waste reduction. This long term county-based effort has fostered mentoring among the companies and also

gives the university an opportunity to provide long term service to industry. Some firms have had extensive experience with pollution prevention concepts. Encouraging them to share their breakthrough solutions lent credibility to the idea that pollution prevention is a business strategy that makes good economic and environmental sense.

**Industrial Solid Waste Issues:** The SHWEC pollution prevention specialist routinely addressed solid waste and recycling issues when conducting pollution prevention assessments. Many manufacturers felt that solid waste issues are of equal importance to hazardous waste issues. SHWEC pollution prevention assessments and county industrial waste forums offered the opportunity to conduct educational programming on a variety of solid waste and recycling issues of importance to manufacturers. This area has emerged as a major emphasis within the agent's plan of work and an additional way to provide value to businesses through industrial Extension outreach efforts. One example is the development of a materials exchange system. This cooperative effort between the city of Beloit's Chamber of Commerce and the UW-Extension will feature a listing of materials available and wanted to turn business discards into feedstock for other businesses or organizations, such as schools and nonprofits.

**Working With the Wisconsin Department of Natural Resources:** Making the district DNR hazardous waste staff aware of the existence of the county pollution prevention project lead to improved interaction between DNR, the University, and industry. DNR staff identified problem areas that could be addressed through University outreach and education. They were also available to discuss specific waste issues with individual firms and made presentations at county waste forums.

### Community and Department Gains

Establishing an educational and technical assistance program that is run through the University of Wisconsin and the Rock County Extension network has clearly enhanced the effectiveness of the state's industrial waste reduction technical assistance for industry. Rock County's positive experience in providing waste reduction outreach to business and industry has attracted significant positive attention to the University in the forms of publicity, funding, and credibility. The outreach approach works well to bring the pollution prevention message to the community. Leveraging pro-

gram resources in this manner is an efficient and accepted way to help companies, especially smaller firms, achieve greater reductions in waste generation and overall improvements in their environmental management practices.

### Lessons Learned

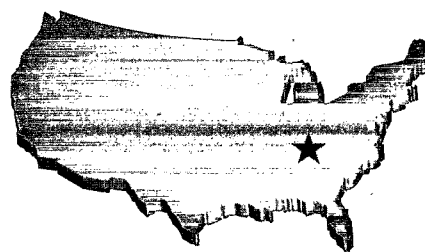
Barriers to pollution prevention practices exist, especially among smaller manufacturers. It is important to recognize that a program focused on hazardous waste reduction will not be relevant to some potential program participants. A willingness to develop helping relationships over time can gradually open doors that may initially be closed. The university's non-regulatory approach is clearly helpful to many businesses that mistrust regulatory agencies. However, sustaining and continuing to build a pollution prevention outreach program will require increased involvement by industry leaders.

### Pollution Prevention Materials Available From Jurisdiction

The University of Wisconsin-Extension has the following materials available to the public:

- outreach brochures
- press releases
- press conference remarks
- business contact sheets
- progress report
- business approach letter
- forum agenda
- business evaluation letter
- evaluation questionnaire

# Rowan County, Kentucky



## Summary

The Gateway District Health Department (GDHD) of Kentucky runs a program to prevent pollution of its adjacent watersheds by targeting old and failing septic systems. The focus of the project is to: provide financial and technical support to low-income families for the removal of old septic tanks; educate the public on the importance of safe water sewage systems; and encourage newer technologies where appropriate.

*Editors note: While this project falls somewhat outside the realm of "source reduction", it is an important pollution prevention and public health effort because its goal is to prevent sewage discharges from septic tanks into adjacent waterways. While the true front-end pollution prevention activities have been highlighted, some of the activities in this program are remediation and waste management strategies. In those sections, you will find recommendations on how the program can continue to move up the waste management hierarchy toward pollution prevention.*

## Program Description

### Impetus for Pollution Prevention Activity

This one-year program began when the GDHD began receiving reports of high bacterial counts in local streams. The program was launched after widespread, consistent complaints from residents seeking to prevent local waterways from becoming further polluted.

## Demographics

### Jurisdiction:

Rowan County, Kentucky

### Population:

20,000

### Type:

Rural

### Contact:

Grace Eddison or Barry Tanning,  
Gateway District Health Department,  
P.O. Box 555, Owingsville, KY, 40360.  
Phone: 606/674-6396  
Fax: 606/674-3071

### Overall Annual Budget of County:

\$6.4 million

### Lead Agency Conducting Pollution Prevention Work:

Gateway District Health Department

The project, funded by the GDHD, the Rowan County Health Board, and the Rowan County Fiscal Court, is a 14-month effort to reduce septic system pathogen loading into Rowan County's Triplett Creek, Christy Creek, and two subwatersheds of Dry Creek (Nichols Branch and Riddle Fork).

The project was developed in response to high bacteriological survey results in the project area. Subsequent analysis confirmed that human sewage – measured by fecal coliform/fecal streptococcus ratios – was present downstream from residential concentrations throughout the project area.

## Strategy

The goal of the program was to prevent discharges from septic systems through: public education, septic system upgrade and

repair, long-term monitoring, and the development of a joint approach to financing the equipment upgrade to enable low-income families to participate in this important pollution prevention activity.

**Public Education:** The program has a number of different educational components, including classroom presentations to students in the Rowan County School District, and educating program participants (those receiving septic system upgrade and repair). The classroom education focuses on the impact of bacterial contamination on streams and watersheds and the resulting public health impacts. Other issues covered include point-source pollution, non point-source pollution, and how faulty sewage treatment plants contribute to these sources of pollution.

*Recommendation: While it is crucial to give the public a primer on sources of pollution, and the environmental and human health impacts of polluted streams and rivers, one way to move the program closer to pollution prevention would be incorporating education about reducing waste materials in general at the source.*

GDHD educates homeowners during the site visits and through the installation or repair of septic system equipment. Health department staff bring literature to the sites to educate residents on the importance of safe and legal septic systems and to provide essential training on the operation and maintenance of septic systems to ensure that they last longer. Residents are also encouraged to install newer technologies when appropriate. The health department advocates these steps for preventing pathogen loading into surrounding watersheds.

**Repair and Upgrade:** The GDHD project involves surveying and addressing on-site septic system problems in three Rowan County watershed areas. Once an old or failing septic system has been identified, project staff make contact with residents to examine how the problem will be solved and to make actual repairs or replace septic system components with upgraded equipment.

**Financial Assistance Program:** Recipients of financial assistance are selected on the basis of Medicaid eligibility and are approved by a three-member committee. Approved applicants who have substandard septic systems are eligible for assistance in the form of a no-cost replacement of the wastewater line from the residence to the septic tank, the tank itself (concrete; 1000 gallons), the line from the tank to the distribution box, and the distribution box. Installation of the remainder of the system (lateral leaching field, plant/rock filter, etc.) is the responsibility of the property owner who must agree to complete the work within 30 days. Health department environmental staff design and inspect all installations. The county assigns labor contracts to the lowest bidder.

**Information Dissemination:** Rowan County has been successful in generating interest in its program through television and print media coverage and by distributing more than one hundred applications for assistance to stores and individuals in the project area.

*It is important to continually emphasize that the goal*

*of the program is the prevention of river and ground-water pollution. One means to achieving this goal is participation in the septic tank maintenance program.*

## Resources Used

### Staffing Resources

Two staff members, transferred from other projects, conduct all activities (monitoring, education, etc.) and generally oversee the program. Water quality monitoring for the project is being handled by graduate students from Morehead State University's Environmental Science program.

### Expenditures and Funding Sources

\$75,000 - Clean Water Act Funds (Section 319)

\$30,000 - Shared-cost funds from county government.

The money for the shared cost portion of the project is provided by funds from the GDHD, the Rowan County Board of Health, and the Rowan County Fiscal Court. Each source donated \$10,000 toward the prevention effort, for a total of \$30,000.

## Outcome and Accomplishments

### Assessment of Effectiveness

This pollution prevention activity is still underway. Sample results are to be reviewed during summer 1995.

### Community and Department Gains

The community gains a tremendous amount through this program. It benefits from having upgraded and properly functioning septic systems, increased education, and cleaner water.

The health department gains by getting positive media coverage for its efforts and, therefore, is able to maintain good public relations. The program also builds linkages with the university community, county government, and the health department and provides all members of the community equal access to the program through its shared-cost program for low-income residents.

## Rowan County, Kentucky

### Lessons Learned

GDHD found it useful to use the media to create interest and educate the public.

There is also a financial barrier to upgrading of failing systems. The health department found that by setting up a joint approach to financing equipment upgrades through low-interest loans and cost-sharing, it eased the financial barriers faced by homeowners, while simultaneously creating incentive for public involvement.

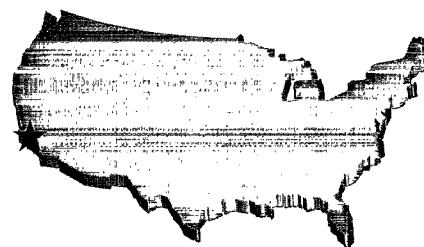
### Pollution Prevention Materials Available From Jurisdiction

Brochures and pamphlets on septic systems; information on alternatives to septic systems (such as plant-rock filters, mound systems and leaching chambers); and samples of press releases.

### Additional Comments

There is a need to develop shared-cost and low-interest loan programs to help low- and moderate- income individuals and families upgrade and/or install new septic systems. Rural areas that have access to publicly-owned sewage treatment plants (POTWs) must pay high service fees which often total \$30 to \$45 per month. These fees could be offset with such a joint approach to financing and would enable individuals in rural areas to participate in this very important pollution prevention activity.

# San Diego County, California



## Summary

The San Diego program is a cornerstone for many cooperative efforts between local environmental regulatory agencies, economic development organizations, community groups, and trade associations. The county designs numerous workshops to provide environmental compliance updates and to present the environmental and economic benefits of pollution prevention. Written information for businesses is available at no charge. The Pollution Prevention Program (P2 Program) is also utilized as a clearinghouse for additional technical and management support information available from state and federal agencies. The purpose of these efforts is to facilitate the exchange of information and to establish partnerships between the local, state, and national "communities" in an effort to improve the quality of the environment and ensure sustainable economic development.

## Program Description

### Impetus for Pollution Prevention Activity

San Diego County recognized the need to provide an added level of service to businesses through an educational outreach program that focused on reducing the volume of hazardous waste. In January 1987, San Diego County received a grant from the State Department of Health Services that helped it to address that need. The program has been maintained due to a

## Demographics

### Jurisdiction:

County of San Diego, California

### Population:

2.6 million people

### Type:

Urban, suburban, rural

### Contact:

Linda Giannelli Pratt  
Pollution Prevention Program  
P.O. Box 85261  
San Diego, CA 92186-5261  
Phone: 619/338-2215  
Fax: 619/338-2139

### Overall Annual Budget of County:

\$1.75 billion

### Lead Agency Conducting

### Pollution Prevention Work:

Department of Environmental Health

focused effort and commitment of staff and management.

## Strategy

The goals of the P2 Program are as follows:

### Direct Assistance to Businesses in San Diego County:

Direct assistance to business is provided through the Environmental Alliance Program (EAP), a community-based information-exchange and positive recognition program for businesses. It promotes environmental protection by achieving the EAP standards. These standards are designed to improve the efficiency of waste reduction, energy and water usage, recycling, and education efforts.

The compliance staff from San Diego County Hazardous Materials Management Division (HMMD) and other local environmental service agencies

present written information to businesses which has been made available by the P2 Program. Some of the inspectors have provided recommendations for improving the efficiency of processes to reduce waste generation and/or have made referrals to the P2 Program. The HMMD "customer service" evaluations indicate that there may be a link between the highly rated inspections and those that provided P2 assistance.

Comprehensive workshops for businesses are conducted by staff from the P2 Program, HMMD, Air Pollution Control District, industrial waste control programs, fire departments, and other agencies and organizations who can address the key environmental concerns of business.

On-site consultations conducted by P2 Program staff help identify organizational and process changes that

## San Diego County, California

may result in the use of safer materials, improved purchasing decisions, and modification of processes so that less waste is created.

### **Direct Assistance to Colleges and Universities:**

San Diego County provides direct assistance to colleges and universities through the Focus Group for Pollution Prevention in the Chemistry Laboratory. The goal of that group is to strike a balance between chemical use, laboratory safety, and financial costs to achieve the maximum reduction of waste while not compromising educational goals. The group meets on a quarterly basis to evaluate and design new policies, procedures and laboratory experiments.

**Direct Assistance to Local Environmental Service Agencies:** The P2 Program coordinates and facilitates issue-specific workgroup sessions for government agency staff. The goal is to help clarify the roles and responsibilities of each agency, thereby fostering opportunities to coordinate programs and ultimately provide consistent pollution prevention information to businesses.

**Indirect Assistance to Businesses in the San Diego-Tijuana Border Region:** The P2 Program will work with San Diego companies and their associated facilities in the Tijuana region to ensure the successful implementation of pollution prevention. Specific program components include:

- Pollution prevention assessments at 5-10 facilities in both San Diego and the Tijuana region with a three-month follow-up assessment to quantify any process changes and results;
- A US-MEXICO roundtable discussion to be held in the summer of 1995;
- A student intern program with engineering students from the University of California at San Diego (UCSD) to work with targeted businesses in Mexico to provide in-depth pollution prevention recommendations. If this is deemed a valuable learning experience by all involved parties, UCSD may be willing to continue to work with Mexican businesses after the duration of the grant program;
- Ongoing coordination with Southwestern College and the UCSD Extension Program to facilitate incorporation of pollution prevention information

into course work at academic institutions in the Tijuana region; and

- A second workshop/roundtable which may be coordinated for selected agencies and organizations that have a substantial role in environmental concerns at the border. The goal of this meeting is to identify common efforts and explore new opportunities for leveraging resources.

### **Indirect Business Assistance Through Environmental Technology Programs and Partnerships:**

Many federal agencies have independently developed extensive databases of environmental technologies and offer many business assistance services. These resources and services have been under-utilized. An alliance between federal and local agencies can accomplish two objectives: improve the effectiveness of the information transfer to businesses, and define the parameters of federal environmental monitoring information needed for local agencies to make credible policy decisions. San Diego County is spearheading an effort to link federal and local agencies to accomplish these objectives.

## Resources Used

### **Staffing Resources**

One staff person leads the program, with many other local agencies contributing staff time as needed.

### **Expenditures and Funding Sources**

The P2 Program was very fortunate to have had an opportunity to plant the seeds of innovation. This was made possible through funding from state and federal agencies. Since 1987, five grants have been awarded to the P2 Program by the State of California and the EPA through the competitive grant process. The total financial benefit to the county has been \$245,000.

The following is a list of program expenses:

1987-1988	"Promote Landfill Alternatives Now" (PLAN) \$50,000
1990-1992	"Technical and Educational Assistance Model" (TEAM) \$55,000
1993-1994	"Partnerships for Pollution Prevention" \$50,000
1993-1995	"Transborder Assistance for

1994      Developing Environmental  
            Excellence" (TRADEX) \$75,000  
            "Connections for Pollution  
            Prevention" \$15,000

The business permit fees for hazardous materials/waste provide additional funding.

### Written Materials and Technical Assistance Sources Used

There has been a significant amount of participation by businesses, industry and trade associations in the community which have contributed to printing and workshop expenditures.

The P2 Program coordinates with the following local business assistance agencies and organizations to disseminate accurate and up to date information on pollution prevention: Center for Applied Competitive Technology; Regional Technology Center; and California Environmental Technology Center.

## Outcome and Accomplishments

### Assessment of Effectiveness

San Diego County continues to move toward achieving its goals. Up to this point it has been successful, but there are many areas in which greater success can be achieved.

### Community and Department Gains

The county has provided an increased level of service to businesses. With business retention being a primary concern, San Diego County's efforts have garnered a more positive relationship between the regulators and the regulated community. As presented in a 1995 report, "The Progress of Pollution Prevention in San Diego County", which was developed by an outside firm, the volume of waste has been reduced while the economic indicators have improved. This is the result of a number of factors, including the success of the county's pollution prevention efforts. It is clear that the P2 Program has helped to improve the quality of the community's environment.

### Lessons Learned

The most important lesson is to determine who the various stakeholders are and to get their involvement early in the design of a P2 program. These stakeholders may be small and large businesses, universities, households, and/or government agencies. The P2 Program learned that it worked most effectively when it focused on a more encompassing "customer service" approach.

### Pollution Prevention Materials Available From Jurisdiction

The most recent documents are as follows:

*Matched for Success: Federal Environmental*

*Technology Resources and Local Government Capabilities (1995)*

*Bridging Economic Competitiveness with*

*Environmental Quality: A Guidebook for Small Businesses (1993)*

*Guide to Environmental Service Agencies (1992)*



# San Francisco, California



## Summary

The City and County of San Francisco employs an active and aggressive pollution prevention program focused on reducing the amount of hazardous waste that is generated as well as decreasing the amount of pollutants that enters the city's sewer system. As a result of its efforts, the city has realized decreases in its waste totals, the amount of heavy metal mass discharged, and has noticed changes in consumer awareness and behavior.

## Program Description

### Impetus for Pollution Prevention Activity

HWMP's pollution prevention activities started in 1988 in response to the passage of a state law in 1986 (AB 2648, Tanner) which authorized counties to develop county hazardous waste management plans for the reduction and management of hazardous waste to the year 2000. During the development of these plans, counties were continually urged to focus on waste reduction to reduce the need for treatment and disposal facilities. Since San Francisco was a county that essentially exported all of its waste, it felt this pressure from

neighboring counties as well.

The initial goals of the HWMP were to target specific small businesses that had a lot of waste reduction potential in an effort to minimize illegal disposal and to help achieve the year 2000 goal of 10 - 40 percent waste reduction. In San Francisco, unlike other parts of the country, small businesses or small quantity generators, generate most of the hazardous waste — approximately 55 percent. To encourage small businesses to pursue waste reduction, the plan also sought to make city departments models of waste minimization for the private sector. Finally, there was an initial major goal of educating all users of the city's Household Hazardous Waste Collection Facility on safer alternatives.

The creation of BERM's Water Pollution Prevention Program (WPPP) in 1990 was a result of criteria outlined in the city's "Best Management Practices Implementation Plan" (October 1990) which was required by the city's Oceanside National Pollutant Discharge Elimination System (NPDES) permit requirements. The purpose of the WPPP was to decrease the identified toxic pollutants that entered the combined sewer system which eventually was discharged into the San Francisco Bay or the Pacific Ocean. The WPPP was charged with qualifying and quantifying the city's pollutants of concern, identifying sources of

## Demographics

### Jurisdiction:

San Francisco, California

### Population:

750,000

### Type:

Urban

### Contact:

**Alex Dong**, Acting Hazardous Waste Program Manager

Office of the Chief Administrative Officer

Hazardous Waste Management Program (HWMP)

1145 Market Street, Suite 401

San Francisco, CA 94103

Phone: 415/695-7339

Fax: 415/695-7377

**Steve Medbery**, Chief

Department of Public Works

Bureau of Environmental Regulation & Management (BERM)

3801 - 3rd Street, Suite 600

San Francisco, CA 94124

Phone: 415/695-7310

Fax: 415/695-7377

### Overall Annual Budget of

### Jurisdiction:

\$2.9 billion (1995-1996)

### Lead Agency Conducting

### Pollution Prevention Work:

The Office of the Chief Administrative Officer's Hazardous Waste

Management Program (HWMP)

Department of Public Work's Bureau of Environmental Regulation & Management (BERM).

the pollutants, developing and implementing source reduction/pollution prevention strategies, and initiating evaluation methodologies to determine the effectiveness of the program.

### Strategy

HWMP's pollution prevention activities are proactive, comprehensive, and multi-media. The city's program addresses hazardous wastes generated by city agencies, the private sector, and households.

The goal related to city departments is to turn them into models of pollution prevention for the private sector. All pollution prevention opportunities are identified or encouraged via the following: 1) review of existing generators and waste disposal patterns; 2) on-site assessment done in-house or by outside contractors; and 3) development of a city employee recognition program. Both technical assistance and some financial assistance are offered to the city agencies. Active technical assistance include on-site assessments, waste classification (sampling and analysis, if required), and waste exchange. Also, publications on safer alternatives and a quantitative methodology — much simpler than the Life Cycle Assessment process — have been developed to identify safer products. This methodology has been peer reviewed and has been recently published in one of ASTM's Standard Technical Publications. Finally, financial assistance has been provided to city agencies to purchase waste minimization equipment, such as a waste paint thinner recycling still.

On the private sector side, the initial focus was small businesses, but now attention is turning to the larger businesses. For city agencies, technical assistance and some financial assistance, in the form of five percent matching grants, are available. Using a very proactive approach, staff and their contractors identify, prioritize (based on waste reduction potential), and approach businesses to provide technical assistance in the form of on-site technical assistance and workshops. Three novel projects have been conducted in the last several years. One project looked at the possibility of technology transfer between large-to-small quantity generators. A recently finished project looked at quantifying waste minimization achieved by selected groups of businesses and the various factors that motivated them, particularly the impact the city had in this regard. A third project, done several years ago, involved the development and dissemination of a self-help checklist to help property owners minimize environmental contamination from leaking underground tanks.

To keep the business community informed about

potentially useful waste minimization technologies and regulations, a newsletter is published and disseminated twice a year. Each issue of the newsletter features a business that is doing something in pollution prevention.

Finally, the city has been running a pilot collection program for conditionally exempt small quantity generators (CESQGs). This program also disseminates waste minimization information to the CESQGs and compiles information on their pollution prevention activities that are eventually disseminated to similar businesses.

In the area of household hazardous waste, city residents have been inundated with public information campaigns and publications promoting proper management, using safer products, buying only what is needed, and recycling. For those who want to get rid of their household hazardous waste, the city has provided a permanent household hazardous waste collection facility which has been another significant educational tool in pollution prevention. The city is trying to measure household hazardous waste reduction by surveying users of the facility on how their buying habits have changed.

WPPP's P2 activities target business, industry, and residential sectors. WPPP develops educational materials for the general public and technical assistance materials for individuals, specific business, and industry. WPPP also conducts steering committees, workshops, presentations and other public participatory projects.

## Resources Used

### Staffing Resources

The above mentioned lead agencies have staff devoted to P2 work in the following manner:

First, in the HWMP, there are five staff devoted to P2 work. The Hazardous Waste Program manager works on P2 approximately 75 percent of the time, including the area of household hazardous waste.

Two assistant program managers are fully budgeted for P2 work to help city departments and the private sectors. Additionally, there are two graduate student interns who provide support to the assistant program managers.

Finally, staff resources are frequently augmented by outside contractors for specific projects.

WPPP has two full-time staff. Staff are dedicated to

# San Francisco, California

public education, source identification, and source control strategies.

## Expenditures and Funding Sources

Exclusive of salaries, the following have been budgeted/spent for P2 work for fiscal year 1994-1995 (fiscal year ends June 30th)

### HWMP's Budget

In coordination with other San Francisco Bay Area counties development of a Green Business Recognition Program	\$6,376
Green Ribbon Panel Awards to recognize exemplary environmentally conscientious businesses	\$7,500
Further development of the Hazardous Materials Resource Center, which will be open to the public in the future	\$7,335
Informational booklets and brochures	\$50,000
Computer Data Base Service to obtain information identifying safer products	\$2,000
Small Business Waste Reduction Grants	\$25,000
Public outreach campaigns	\$20,000
Support for waste classification and help city departments implement waste reduction	\$20,000
<b>Total</b>	<b>\$138,211</b>

**Note:** The above does not include a couple of projects continued over from the previous fiscal year.

### WPPP's Budget

Public education	\$178,000
Cooling towers	\$76,000
Small businesses, e.g., screen printers, jewelers, and automotive services	\$79,000
<b>Total</b>	<b>\$330,000</b>

HWMP is funded by the impound account -- the garbage monies. Very infrequently this is supplemented by small state grants.

WPPP is funded by the sewer service charge.

## Written Materials and Technical Assistance Sources Used

The City and County of San Francisco uses a variety of documents including EPA's P2 facilities management guides, state materials, material from other non-profit organizations, and material from other local governments which is collected from all Bay Area and California agencies for each other's use.

## Public or Private Sector Partners

The Printing Industry of Northern California, San Francisco Dental Society, California Dental Society, American Dental Association and Hospital and metal finishing associations have been partners.

## Outcome and Accomplishments

### Assessment of Effectiveness

The city has done very well in meeting and pursuing its goals, especially those related to the private sector and household hazardous waste.

The city has used various techniques, manifest data, and surveys over the last few years to assess progress in waste minimization. The manifest data appears to show that the city has done a better job in waste reduction for the period 1989 to 1992 than perhaps seven of the eight other counties in the San Francisco Bay Area, taking into account changes in the number of generators and employment data. Some Bay Area counties have had totals similar or slightly higher for the period, whereas, the city has shown an approximately 25 percent decrease in its waste totals. This achievement is matched by only one other San Francisco Bay Area county. Since the inception of the P2 program, surveys have been done as a matter of course to assess the effectiveness of projects. Finally, a recent study's preliminary results show that almost all the facilities demonstrating waste reduction practice at least one method of waste minimization and the most common techniques are better management practices and house-keeping. Fifty percent of the facilities received information from HWMP and 21 percent have expressed interest in participating in a city-sponsored waste minimization assessment. The next phase of the survey is to verify waste minimization claims by conducting on-site waste assessments.

## San Francisco, California

In the area of household hazardous waste, surveys show that 75 percent of the users of the city's household hazardous waste collection facility have been buying less toxic or safer products. To verify this, the city has evaluated the volume of waste brought in by participants. These have shown significant decreases for the last several years. For example, each participant brought in 9.4 gallons in 1988 (the year of inception when there were 50 participants per week) versus 7.0 gallons in 1993 (when there were 225 participants per week) and 40 percent of the users were new.

Over the past 15 years, the quality of the influent to the city's water pollution control plant has improved. Specifically, from 1975 through 1990, the total heavy metal mass loading discharged into the SEWPCP (influent) decreased 91 percent. Most of this reduction can be attributed to the city's aggressive pretreatment program. However, it appears that the WPPP has played a significant role in reducing the silver levels in the influent from photo finishers and printers when they were added to the list of regulated silver dischargers. A second method that WPPP uses to measure the effectiveness of its program is bi-annual phone surveys of city residents, which began in 1992. The second survey, in 1994, showed that, in general, residents were using toxic products at a lower rate and that they appear to be taking a greater personal responsibility in reducing water pollution.

### Community and Department Gains

The HWMP has, through its pollution prevention efforts, helped city departments and businesses save money and reduce exposures to toxics. In return, it has received national recognition, such as the 1992 Award for Best Local Government Reduction Program in the Nation presented by the HAZMACON Conference.

WPPP's efforts are reducing the levels of toxic pollutants discharged to sewer systems which helps the city to meet NPDES limits. Efforts also assist businesses in complying with wastewater discharge permits. Finally, efforts provide residents and small businesses with information on proper disposal outlets and product alternatives.

### Lessons Learned

There are two basic approaches to a waste minimization program; passive and active. Passive approaches rely on such tools as newsletters. Active approaches involve soliciting participation on a one-to-one basis

and providing on-site consultations. Many waste minimization programs are passive. San Francisco's program has elements of both, but is more active than passive. The passive approach is less expensive, but San Francisco has found the active approach more effective. San Francisco believes that a model waste minimization program must contain elements of both.

The city found that personalized solicitations such as telephone calls were extremely effective in getting businesses to attend workshops and allow waste assessments of their facilities. Doing workshops prior to the waste assessments is another way -- the most effective way found to date -- to engender cooperation from businesses.

The city found that field testing educational and technical pieces -- review by members of the target audience -- was very effective in producing readable and usable materials.

The grant program for small businesses has been successful. The city found in implementing the grant program that the paperwork that businesses needed to fill out to apply and receive the grant was sometimes daunting. In fact, one business decided against receiving the grant because of the paperwork. As a result, the city streamlined the bureaucracy.

San Francisco has found that in the development and implementation of a waste minimization program, it is important to continually solicit the input and comments of businesses. San Francisco has accomplished this through focus meetings with key representatives of the target businesses at the developmental stage and through follow-up questionnaires and telephone surveys.

The city discovered that a waste minimization program is more favorably received when it operates in conjunction with a program that addresses waste that would still be generated. It seems businesses are more receptive to waste minimization programs when they know there will be a place where they can afford to dispose of the waste they will continue to generate.

Another observation is that success or participation might have been greater in some of the above programs if they were done in such a way that the businesses did not feel that their participation could lead to enforcement in other areas.

The success of the waste minimization program for city departments, depends a great deal on top management's endorsement and the development of collegial relationships with counterparts in the city agencies. Otherwise, turf invasion might become a concern. One key to developing a collegial working relationship is to

work on projects jointly and to recognize the contributions of the participating department through a jointly authored report and a recognition program. A big hindrance is the bureaucratic nature of government, which seems so often to have instilled the fear of liability in government personnel, paralyzing them from attempting something new.

Overall, however, especially in cases where one has control through the chain of command, it appears that is easier to try out new products or processes in a government setting. This is perhaps due to the fact that government is not profit oriented, making it a more conducive environment for experimentation.

It appears that government and big businesses are more likely to explore new technologies. Small businesses with limited funds, are more risk-adverse and, in some cases, must be induced by grants to try "off-the-shelf" technologies. Also, social psychological research studies done in the early 1980's may have relevance in encouraging small businesses to implement waste reduction activities. These studies showed that rational economic models (REMS) often failed to change the behavior of small groups or individuals, especially when benefits are marginal or hard to detect in terms of energy conservation. In these cases, it seems that REMs that are presented using social psychological tools make a significant difference in changing behavior. An underlying theme is that whatever approach is used should be user-friendly and showcase peers who are already successfully using the techniques or technologies. The latter is of paramount importance in terms of encouraging the use of new techniques or technologies. Another obvious recommendation is program elements should be affordable to the targeted businesses.

### **Pollution Prevention Materials Available From Jurisdiction**

#### **HWMP's Publications and Materials**

*On the Safe Side* Newsletter, biannually.

*Automotive Radiator Repair Shops Fact Sheet*, 1995

*Lighting Manufacturing Facilities Fact Sheet*, 1995

*Printed Circuit Board Manufacturing Facilities Fact Sheet*, 1995

*Reprographics Facilities Fact Sheet*, 1995

*Silversmithing and Electroplating Facilities Fact Sheet*, 1995

*Tallow Manufacturing Facilities Fact Sheet*, 1995

*Quick Checklist for Auto Body Repair Shops*, 1994

*Quick Checklist for Automotive Repair Shops*, 1994

*Quick Checklist for Painting Contractors*, 1994

*Quick Checklist for Printers*, 1994

*Small Business Hazardous Waste Reduction Technology Transfer Opportunities and Public Assistance Needs in San Francisco - Lessons from the Lithographic Printing and Commercial Painting Industries*, August 1994

*City Safe Fast Facts #1 - Industrial Solvents*, 1994

*City Safe Fast Facts #2 - Adhesives*, 1994

*Your Guide to Less Toxic Shopping*, 1994

*Waste Reduction Assistance for Small Quantity Generators*, 1993

*Service Station Hazardous Waste Reduction and Management Checklist*, 1991

#### **WPPP's Publications and Materials**

*Water Warriors*, newsletter

*When Something goes Down the Drain...*, general public brochure

*Get to the Root of the Problem*, homeowners brochure

*Help Paint the Town Green*, pollution prevention tips for painting contractors

*The Green Wrench Guide*, pollution prevention tips for auto repair & body shops

*Rx of a Healthy Environment*, pollution prevention tips for hospitals and medical office buildings

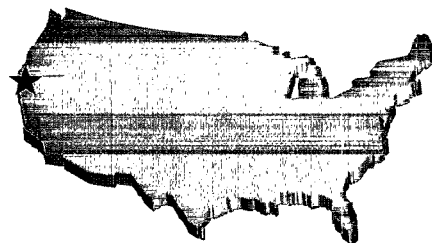
*Estuarywise*, brochure for citizens

*Public Education Plan*, document

*Clean Image*, pollution prevention tips for photoprocessing and printing operations

Note: Both the HWMP and the WPPP produce a variety of bill inserts, bus transit signs, point-of-purchase posters, and door hangers.

# Santa Clara County, California



## Summary

Santa Clara County is an urban and industrial county that is a center for high-tech industries. The major metropolitan area is San Jose. The population is diverse, mobile and well-educated. The Santa Clara County Pollution Prevention (P2) Program was created to promote effective countywide pollution prevention. P2 program activities are directed by the Hazardous Materials Advisory Committee, a countywide coalition of government, industry, and public interest organizations. The P2 program coordinates with a variety of stakeholders in the community to conduct cost effective, complimentary technical assistance, business recognition, and regulatory streamlining activities.

## Demographics

### Jurisdiction:

Santa Clara County, California

### Population:

1.7 million

### Type:

Urban

### Contact:

Isao Kobashi, Program Manager  
Environmental Management Agency  
1735 N. First Street, Suite 275  
San Jose, CA 95112  
Phone: 408/ 441-1195  
Fax: 408/ 441-0365

### Overall Annual Budget of County:

\$1.25 billion

**Lead Agency Conducting  
Pollution Prevention Work:**  
P2 Program

The P2 program activities include technical assistance, incentive programs, regulatory streamlining, and policy coordination. The P2 Program has a broad environmental focus, examining hazardous materials as they affect land, air, and water resources.

## Strategy

The pollution prevention strategy has four major foci:

- Technical assistance to business
- Regulatory structuring
- Incentive or recognition programs
- Evaluation and regional policy coordination

P2 program activities have worked to promote pollution prevention in various sectors. Activities have been primarily directed at small and large industry, schools, and govern-

ment. To ensure that it is providing effective and complementary activities, the P2 program works closely with a number of other organizations, including: regulatory agencies, publicly owned treatment works (POTWs), trade associations, local chambers of commerce, environmental organizations and community colleges.

## Program Description

### Impetus for Pollution Prevention Activity

The current Hazardous Materials Advisory Committee, which directs the P2 Program, evolved out of a countywide planning process to examine siting criteria for treatment, storage, and disposal facilities. Waste reduction and pollution prevention were identified as important parts of the plan created to avoid the need for new hazardous waste facilities. The P2 program is the technical staff of the Hazardous Materials Advisory Committee which was created as a countywide forum for developing consensus on hazardous materials issues and promoting pollution prevention.

## Resources Used

### Staffing Resources

The staffing resources include four full-time employees, including a program manager, an

## Santa Clara County, California

employee who directs regulatory streamlining activities and two employees who focus on technical and incentive programs. The staff are employed on a contractual basis except for the program manager who is classified as a regular county employee. The P2 program is able to accomplish numerous activities with limited staff by using interns, contracting specialists, and leveraging resources.

### Expenditures and Funding Sources

The annual budget for pollution prevention expenditures is approximately \$270,000 which comes from the following sources:

County	\$90,000
15 cities combined contribution	\$90,000
Santa Clara Valley Water District	\$90,000
<b>Total</b>	<b>\$270,000</b>

In addition, the P2 program has received grant funding from US EPA and California EPA for specific projects.

### Written Materials and Technical Assistance Sources Used

The written materials and technical assistance sources most commonly used are as follows:

California EPA Department of Toxic Substances Control Technology Clearinghouse publications; Local government materials, like those developed by the Bay Area Hazardous Waste Reduction Committee (BAHRC); US EPA publications; Technical assistance from Lawrence Livermore National Labs; In-Kind Contributions of Consultants

### Public or Private Sector Partners

The P2 Program targets activities through partnerships with other organizations including joint ventures with diverse groups: Partners include:

County Office of Education;  
Santa Clara County Bar Association;  
Printing Industries of Northern California;  
National Metal Finishers Association;  
Community Colleges;  
Silicon Valley Toxics Coalition;  
Chambers of Commerce;  
Business Environmental Assistance Center;  
Santa Clara Valley Manufacturing Group;  
Joint Venture Silicon Valley;  
Lawrence Livermore National Labs;

University of California Extension;  
League of Women Voters;  
Business Environmental Network; and  
The Semiconductor Industry Association

The P2 program uses in-kind contributions from the business community to maximize its activities. During the past three years, the P2 program has successfully obtained industry contributions of equipment and services exceeding \$100,000.

## Outcomes and Accomplishments

### Assessment of Effectiveness

The P2 Program has successfully translated its objectives into a number of projects including: seventeen P2 workshops, two technical assistance documents, and an awards program. Recently, the P2 program initiated a project to provide on-site waste minimization technical assistance for printed circuit facilities through a partnership with Lawrence Livermore National Laboratory, the San Jose/Santa Clara POTW, and the Business Environmental Assistance Center (BEAC). The P2 program conducted an analysis of regulatory overlap and staffed a county-wide effort to consolidate hazardous materials and waste regulatory agencies.

Assessing the effectiveness of these activities has been a serious challenge for the P2 program. Surveys of attendees, unsolicited letters of support, and high attendance rates all indicate that the technical workshops and publications provide valuable information and are highly regarded by the business and regulatory communities. Due to the complex nature of pollution prevention decisions, the P2 Program has had little success in actually identifying pollution prevention measures directly related to its activities. The P2 Program is currently creating a consolidated environmental database that may assist with tracking waste generation rates. Although the P2 program conducts cost effective outreach through its partnerships with other organizations, it has had limited success obtaining publicity in the broadcast media for its award winners. Increasing public awareness of the program activities remains an important goal.

### Community and Department Gains

The P2 program activities have created a positive collaboration between business and government to deal with hazardous materials issues. The P2 Program has played a critical role in bringing resources to the community including the following:

- locating funding and office space for the Business Environmental Assistance Center;
- developing consensus and leading negotiations for the creation of a permit assistance center;
- creating a joint project with Lawrence Livermore National Lab to provide technical assistance for local companies; and
- obtaining grant funding for local P2 projects.

HMAC workshops and publications benefit the business community by providing low-cost waste management and minimization information that would not otherwise be available.

### Pollution Prevention Materials Available From Jurisdiction

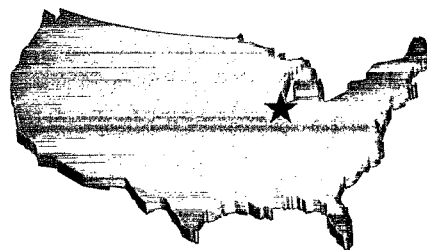
*The Hazardous Waste Survival Guide*—a small and medium business resource for hazardous waste management and reduction (100 pages)

*Who Regulates What?* A quick reference guide to environmental regulatory agencies

Financial Resources Factsheet



# St. Clair County, Illinois



## Summary

The St. Clair County Health Department's pollution prevention program was carefully planned to expand the environmental protection, remediation, recycling, and waste management strategies included in the county solid waste management plan. By forming partnerships with the business community and reaching out to the community through forums and other educational projects, the county was able to increase awareness about how pollution prevention methods can resolve environmental problems.

*Editors note: This case study represents many important environmental protection activities, but not all of them are pollution prevention (source reduction). The activities that are true front-end prevention efforts have been highlighted. Other activities which fall outside the realm of source reduction, such as remediation, recycling and waste management strategies, include recommendations on how they can move further up the waste management hierarchy towards pollution prevention.*

## Program Description

### Impetus for Pollution Prevention Activity

In 1987, the health department initiated a solid waste enforcement program as a means to halt the creation of illegal dumps and as a deterrent to random dumping. This initial approach was expanded to

## Demographics

### Jurisdiction:

St. Clair County, Illinois

### Population:

262,852

### Type:

Urban, suburban, and rural

### Contact:

Bonnie Robinson, Pollution Prevention Manager, St. Clair County Health Department, 19 Public Square, Suite 150, Belleville, IL 62220-1624.  
Phone: 618/233-7769  
Fax: 618/233-7713

### Overall Annual Budget of County:

\$325 million

### Lead Agency Conducting Pollution Prevention Work:

St. Clair County Health Department

include a recycling program and a pollution prevention education effort.

The recycling program began in November 1989, in response to the Illinois Solid Waste Planning and Recycling Act. That act required counties with populations over 100,000 to develop a solid waste management plan and recycle 25 percent of municipal waste by the end of the fifth year of the program.

As the program evolved, it became apparent that it was necessary to find ways to reduce the generation of solid waste. Townships, cities, and businesses must come to terms with the need to manage and reduce solid waste in a way that balances economics with public health protection. Pollution prevention, a viable component of solid waste management, is a preferred approach to addressing a multitude of

environmental concerns. Rather than paying the financial and environmental costs of waste management, it encourages waste prevention. Establishing a pollution prevention program helps meet the county's solid waste management needs by minimizing the level of waste generated and providing local businesses with a means to achieve compliance with environmental regulations.

The St. Clair County pollution prevention goal is to assist the public and businesses in identifying pollution prevention opportunities and to encourage the implementation of pollution prevention activities.

## Strategy

The program's main pollution prevention activities include: coordinating projects with the U.S. Environ-

## St. Clair County, Illinois

mental Protection Agency (EPA), establishing advisory groups, and promoting citizen awareness through educational activities.

The major activities include an industrial/manufacturing waste minimization education program, a program to find alternatives to leaf burning, a safe-tire disposal program, and a household hazardous waste collection program.

**Partnerships with Businesses:** In order to reach state solid waste management goals, the St. Clair County Health Department found that it is essential to have the cooperation of every entity. The U.S. EPA and the Illinois Environmental Protection Agencies (IEPA) provided an environmental forum for business and industry, "Realities, Recycling, and Pollution Prevention." The purpose of that forum was to get businesses involved in pollution prevention programs. One result of the forum was the establishment of the Industrial/Manufacturer's Environmental Advisory Group, a group of businesses that agree to establish waste minimization programs at their respective companies. Those businesses are working together to share ideas and expand programs.

In 1995, the advisory group assisted with a conference, "Recycling in 1995 is Good Business," that focused on recycling and source reduction. More than one hundred participants attended the conference and fourteen businesses provided exhibits. Representatives from the Department of Energy and Natural Resources, IEPA, and businesses, such as Monsanto and Schnucks Stores, provided information about recycling, industrial materials exchange and the steps to take for waste minimization.

*Recycling is an excellent first step to conserving energy and reducing waste. However, pollution prevention (source reduction), which is the efficient utilization of raw materials, energy, water, and other resources, the substitution of benign substances for hazardous ones, and the removal of toxic substances in all stages of the production process, is the preferred solution and the goal of this compendium for achieving waste minimization.*

The pollution prevention manager of the St. Clair County Health Department has developed a training program for solid waste educators. That program, "Solid Waste Solutions," will prepare trainers in conducting presentations to businesses about the EPA's Waste Wise Program -- a program which is designed to motivate businesses to incorporate waste reduction into their operations. Once the program is estab-

lished, this pollution prevention information will be shared with industry and manufacturers throughout the county. Monthly meetings of the commercial advisory group and quarterly meetings of the industrial/manufacturing advisory group will continue to focus on information sharing and developing methods of waste minimization.

**Educational Activities on Alternatives to Leaf Burning:** Studies by the Environmental Health Center of Illinois and American Thoracic Society, the Medical Branch of the American Lung Association, have found that the levels of pollutants, organic aldehyde, ketones, and particulate matter produced by leaf burning result in an increase in acute respiratory illness, particularly in pre-school children and older adults. A leaf management coalition was formed with representatives from the St. Clair County Health Department, American Lung Association, Illinois Soil and Water Conservation District, Illinois Nurses Association, and area hospitals to identify alternatives to leaf burning and to educate the public about environmentally sound leaf management.

Currently, the city of O'Fallon, IL is using a vacuum for the management of leaves and has provided demonstrations for other communities on leaf composting. Also, the village of Freeburg, IL is conducting a pilot study of the feasibility of using a "billy goat" which is a smaller piece of equipment that mulches the leaves as it collects them. Several communities have expressed an interest in locating farms that will accept leaves to apply at an agronomical rate.

The St. Clair County Health department invited area firemen to participate in a forum, "Learn Not to Burn Leaves." Fire departments from several cities in the county have agreed to assist in educating students about the environmental and human health problems associated with leaf burning during Fire Prevention Week, as well as throughout the year.

**Safe Tire Disposal:** St. Clair County has had a tremendous problem with inappropriate, illegal tire disposal. The six states in EPA's Region 5 -- Indiana, Illinois, Michigan, Minnesota, Ohio, and Wisconsin -- produce more than 46 million scrap tires every year. An EPA report indicates that stockpiled scrap tires, estimated at two to three billion tires nationally, pose potentially serious health and safety problems. Whole tires serve as breeding grounds for disease-carrying mosquitos and rodents; uncontrolled tire

## St. Clair County, Illinois

piles are fire hazards which can burn out of control for months.

In order to prevent the environmental and public health problems generated by illegal tire dumping, St. Clair County, together with EPA is working to reduce illegal dumping and to encourage proper tire disposal. Main activities include: providing the public with accurate and accessible information about the scrap tire problem; holding educational forums with active community groups about proper tire management; and coordinating county-wide tire clean-up programs with the IEPA and host sites.

*Recommendation: This activity is an excellent example of a waste management activity that addresses both environmental protection and public health. To be a true pollution prevention activity, however, the health department would need to find ways to prevent the problems of tire disposal from happening in the first place. One way would be for the health department to educate the public on the purchase of longer-lasting tires and improved tire maintenance to extend the life of automobile tires. Those activities prevent or reduce the amount of tires in need of disposal.*

**Hazardous Household Waste Collection:** The St. Clair County Health Department brings the public and government together to resolve environmental issues with projects such as the Household Hazardous Waste Collection Program. This program educates residents on the health risks posed by hazardous household waste and sets up collection days and drop-off sites. Participation has increased each year due to strong support from advisory groups and community leaders and an increased emphasis on public education.

The success of the program results from public education, consisting of forums and workshops, ongoing publicity campaigns, and linkages with government agencies such as the Illinois Environmental Protection Agency and the Illinois Department of Energy and Natural Resources to obtain technical assistance.

*Recommendation: This program is a waste management program which consists of the collection of hazardous wastes. It is not considered a pollution prevention program until its focus shifts from management to prevention of pollution. In other words, the health department can move towards pollution prevention by incorporating into its educational curriculum alternatives to household products which*

*produce hazardous wastes or other ways to reduce the consumption of such products.*

## Resources Used

### Staffing Resources

Pollution prevention projects are currently the responsibility of the pollution prevention manager. It is anticipated that the activities will soon require an additional staff person. The manager handles pollution prevention activities by planning, developing, and organizing initiatives that respond to specific environmental issues. The county's environmental health needs are assessed in cooperation with representatives of municipalities, industry, manufacturers, business, government, and citizens.

### Expenditures and Funding Sources

Staffing - \$34,310; Indirect Costs - \$24,209  
Staff are engaged in both pollution prevention activities and recycling efforts.

Funding is provided from a surcharge based on waste being disposed of in landfills in St. Clair County.

### Public or Private Sector Partners

Lists of the advisory/support groups are available.

## Outcomes and Accomplishments

### Assessment of Effectiveness

St. Clair County is very proud of its environmental record. A representative sample of waste generated indicates that through combined efforts the solid waste generation rate has decreased from 4.3 pounds per person per day (estimated in 1990) to 2.99 pounds in 1994. However, the county is continuing to study waste generation rates. Participation in recycling is at a record high and the community has clearly expressed an interest in getting further involved with more expanded pollution prevention efforts. An advisory group is used to evaluate the

effectiveness of existing programs and a community assessment is planned to identify additional environmental issues that need to be addressed.

### **Community and Department Gains**

The biggest success of the program has been that individual citizens, businesses, and government officials have worked together to solve the community's pollution problems.

### **Lessons Learned**

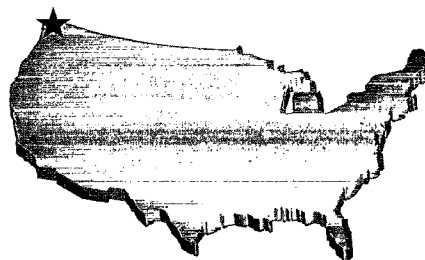
Advisory groups made up of businesses, community activists, and government officials greatly expand the level of involvement in the community.

Successful projects spawn increased participation in future pollution prevention activities.

### **Pollution Prevention Materials Available From Jurisdiction**

A resource library of materials from the USEPA, IEPA, the Illinois Department of Energy and Natural Resources, and the National Association of County and City Health Officials are available. In addition, examples of materials developed by the health department are available.

# Thurston County, Washington



## Summary

Thurston County runs a comprehensive waste management program which addresses prevention, recycling, and disposal of household hazardous waste, and conditionally exempt small quantity generator waste. The goal of the program is to educate the public on the health and environmental risks of such hazardous wastes and to protect the water resources and quality of life in Thurston County.

## Program Description

### Impetus for Pollution Prevention Activity

Prior to 1991, no comprehensive program existed in Washington State for properly preventing, reducing, or managing the production of small amounts of hazardous waste. Federal and state hazardous waste disposal laws applied only to large producers -- for industries producing more than 100 kilograms of hazardous waste per month. Businesses that produced hazardous waste below the state threshold were slipping through the regulatory cracks. Households that dumped out old pesticides, used motor oil, unwanted paints and solvents, or miscellaneous cleaning or hobby products also were exempted from state and federal hazardous waste laws.

In 1985, the Thurston County Environmental Health Division and Public Works Department began hosting annual household hazardous waste collection events; in

## Demographics

**Jurisdiction:**  
Thurston County, Washington

**Population:**  
185,900

**Type:**  
Urban, suburban and rural

**Contact:**  
Sally Toteff, Senior Hazardous Waste Specialist, Thurston County Environmental Health, 2000 Lakeridge Drive, Olympia, WA 98501  
Phone: 360/754-4663  
Fax: 360/754-2954

**Overall Annual Budget of County:**  
\$162 million

**Lead Agencies Conducting  
Pollution Prevention Work:**  
Public Health and Social Services Department and Department of Water and Waste Management

1987, a permanent collection facility was opened and provided weekly collection service. These collection services were only getting at the tip of the hazardous waste iceberg. Staff estimated as much as 1,919 tons of hazardous waste was being produced annually by small businesses and homeowners. All of this slipped through the cracks of the state and federal regulatory system. In the same year, the state legislature passed a bill mandating local governments to plan and implement local hazardous waste programs.

In 1988, the Thurston County Board of Health and Environmental Health Division decided that a more comprehensive local action must be taken. The health and welfare of the 161,000 people living in Thurston County depend on clean and pure environmental resources unaffected by hazardous waste contamination. The board and staff clearly understood that hazardous wastes exempted or excluded from state

regulations due to their small quantity or household origin had the potential to pose significant risk to public health and the environment if not properly managed. In the previous year, planning and implementation grants were created through a new state tax on certain hazardous materials. The health department applied for state grants to prepare a local plan.

In 1989 and 1990, a broad-based committee created a five-year hazardous waste plan. The plan was adopted by the eight local jurisdictions in Thurston County and by the Washington State Department of Ecology. Implementation of the plan began in 1991. Development of recommended programs began imme-

## Thurston County, Washington

diately. By the end of the third year of implementation, program development was nearly complete. As the program has transitioned into more program maintenance (as opposed to program development), budget demands have decreased. An update to the five-year plan is underway and will lay out a road map into the year 2001.

### Strategy

The adopted plan includes a variety of programs aimed at reducing the mismanagement of hazardous waste from small sources. Waste reduction is identified as the most important waste management goal throughout the plan. A mix of education, technical assistance, waste collection, and enforcement programs are recommended for small businesses and homeowners. Evaluation techniques are also identified in the plan to help gauge success or failure of programs. In addition, dedicated local funding sources are identified for the program.

**Common Sense Gardening:** This program focuses on reducing the use of pesticides by interested residential gardeners. Activities include dissemination of integrated pest management (IPM) information via common sense gardening guides, community-based workshops, local festivals, and a youth program using integrated puppets.

A consumer point-of-purchase program is co-sponsored by local gardening stores. That program uses: "shelf-talkers" to highlight least-toxic products; plant signs that feature disease and drought-tolerant plants; a brochure rack that displays common sense gardening guides; and banners and posters advertising the program.

**Common Sense Flea Control:** This is a pesticide reduction program targeting pet owners. The Common Sense Flea Control Guide is distributed through pet stores and animal clinics.

**School Program:** This program offers messages about prevention, recycling, and safe disposal of hazardous household waste. Environmental educators offer two classroom presentations, and illustrative activities from the "It All Begins at Home" curriculum guides. Separate curriculum guides were created for grades K-6 and 7-12 and are distributed to schools throughout the county. A specific program about environmental car care targets students enrolled in driver's education. The program includes a teacher's folder,

student folder, and a video starring "Cheers" TV character Cliff Claven. The student folder offers a maintenance log, a list of recycling and disposal sites, and recipes for least-toxic car cleaners.

**Green Cleaning Consumer Education:** This program teams with local grocery stores to promote awareness of least-toxic cleaning products. The program also teams with local solid waste reduction and ground water programs. An interactive display is set up for two-week periods near the entrance of a participating store. Shoppers can sign up for weekend store tours that will discuss least-toxic cleaning products. Green Cleaning Kits and recipe cards for least-toxic products are awarded after the tour.

**Paint Waste Reduction Consumer Education:** "Give Excess Paint the Brush Off" teams with local paint retailers. The messages of this program are: measure first so you'll know how much paint you'll need; choose latex over oil-base; store leftovers safely; dispose of unusable paint at "Hazo House." The program uses shelf-talkers and a brochure that explains how to reduce the creation of unwanted or excess paint.

**General Community Education and Coordination:** This activity involves workshops, special presentations, and participation at local fairs and festivals. It also includes integrating and coordinating messages and programs among other environmental education efforts underway in the county. This also involves operation of a local information line about household hazardous waste disposal and alternative products.

While disposal of household hazardous waste is not pollution prevention, finding and encouraging the use of safer substitutes to prevent such hazardous waste is a way to move one step further up the hierarchy toward pollution prevention.

**Operation: WaterWorks - Business for a Clean Future:** This activity is inter-jurisdictional between two cities and the county. The goal of the program is to assist businesses in complying with stormwater and hazardous waste requirements through education and technical assistance. The program targets automotive, construction, landscaping, and janitorial business categories. The program continues to offer workshops, consultations, and handbooks.

Operation: WaterWorks achieves its goal of compli-

## Thurston County, Washington

ance education through surveys, brochures, business-oriented handbooks, self-assessment/pollution prevention worksheets, workshops, community recognition, and pollution prevention follow-up consultations.

**Business Pollution Prevention Program:** This is a major activity that includes education, technical assistance, and compliance assistance. Source reduction is built into each step whenever possible. The program evolved after a comprehensive survey of conditionally exempt small quantity generators was completed during the second year of implementation. The program involves targeting business categories and offering voluntary technical assistance audits followed by mandatory compliance visits.

There are a number of steps in the process of targeting a business category. These include: researching the waste streams and alternative products or technologies; communicating with existing business groups; coordinating with other regulatory agencies; compiling a mailing list for the target audience; preparing fact sheets; sending letters; following up letters with telephone calls; carrying out waste audits; following up audits with letters; recording data; conducting follow-up compliance visits; issuing "notices of violation" where necessary; awarding "certificates of environmental achievement" when a business is in compliance; and compiling final reports at the end of a campaign. A different approach that will target a geographic area composed of mixed business types will be implemented in year five of the program.

This program is an excellent example of how to reach out to businesses in the community, find the users of toxic substances and generators of hazardous waste, and create common goals of regulatory compliance and public health risk reduction. However, it is important in any regulatory compliance assistance endeavor to emphasize source reduction strategies and to incorporate pollution prevention goals into the design of all compliance plans.

**Small Business Information, Education and Outreach:** This activity is the umbrella for the general activities that are carried out by the Business Pollution Prevention Program. Activities include operation of an information line, creation and updating of basic waste management and pollution prevention materials, presentations, participation in workshops and trade fairs, and coordination with building departments and other local agencies.

## Resources Used

### Staffing Resources

Staffing levels began, in 1989, with funding for two staff positions. Funding has increased to accommodate more than six positions in 1995.

### Expenditures and Funding Sources

The budget for program implementation began in 1990 at \$150,000. In 1991, the budget grew to \$574,000 and increased steadily until 1993 while one-time only state grants were available to help offset the costs of putting the plan in motion. The cost of the program in 1995 was \$550,000.

The local hazardous waste management program is supported by solid waste tipping fees and state grants. A long range funding study concluded that two additional revenue sources should be developed: enforcement penalties and a user fee for business waste collection programs.

Hazardous waste specialists, environmental educators, and hazardous waste collection facility operators have been hired specifically to carry out the new tasks mandated by the adopted local plan. Public information specialists and clerical support staff are contracted through another county department based on annual needs.

### Public or Private Sector Partners

The local hazardous waste program serves the seven cities and unincorporated areas of Thurston County and consequently represents a partnership of these eight public entities. The program also partners with the private sector when appropriate. In the four consumer point-of-purchase education programs, local retailers are partners in public education. In the used oil collection network, local businesses "host" and maintain the site and the county provides the collection tank, oil collection service, and recycling.

In the Business Pollution Prevention Program, local business groups are often tapped for advisory committees, co-sponsorship of workshops, or endorsement of programs. Product suppliers and vendors are also regularly consulted.

## Outcomes and Accomplishments

### Assessment of Effectiveness

The local hazardous waste plan includes evaluation goals for a number of the recommended programs. Eight of the 12 evaluation goals have been achieved. A list of the evaluation goals is available.

The methods used for evaluation include residential opinion surveys, business surveys, targeted audience surveys, data collected during waste audits and compliance visits, data collected on distribution of materials, data collected on waste collection and participation rates, and interviews.

Several significant accomplishments in pollution prevention activities include:

- Household hazardous waste awareness and practices: In the first and third years of plan implementation residential telephone surveys were carried out. In the third year, about 80 percent of respondents could correctly identify hazardous products; 92 percent of respondents reported they used at least one least-toxic alternative product; and 45 percent of respondents reported they properly dispose of household toxics.
- Small quantity generator reduction, recycling, and disposal: In the fourth year of plan implementation 51 percent of businesses that received waste audits implemented at least one new waste reduction activity. Forty-six percent of businesses that were audited improved their recycling or disposal of hazardous waste.

### Community and Department Gains

The effect on the small business community and homeowners has been significant. Since 1991, thousands of people have directly benefitted from the program. More and more requests come in every week for information about hazardous waste disposal and waste reduction techniques. The volume of household hazardous waste being collected at the collection facility has nearly tripled since 1991. The number of small businesses using a hazardous waste recycling or disposal service has more than doubled. The percentage of businesses who have come into compliance with the local ordinance is very high. As more and more small

amounts of hazardous waste are properly managed, there is decreasing risk for releases of hazardous waste into water, land, or air. Furthermore, as homeowners and business operators become attuned to the health risks associated with exposures to hazardous wastes, they are taking more precautions when handling these substances. The health risks to garbage haulers, landfill operators, and fire fighters are also reduced when even small quantities of toxics are properly disposed.

The effect on the Environmental Health Division and Water and Waste Management Department has also been significant. Program staff have gained experience and credibility and have been able to link their efforts with other local environmental or resource protection programs. Program staff are regularly consulted by others in county departments as well as by other agency staff regarding hazardous waste issues.

### Lessons Learned

- Communicate to your audiences the cost of disposal vs. the cost of prevention whenever possible - and communicate who pays and who benefits.
- Build program evaluation into your initial program design. Collect different kinds of evaluation data throughout the phases of each program to ensure you have the right kind of data needed to carry out regular evaluations.
- When developing programs, seek advice and review from a range of community, agency, and private perspectives/audiences.
- When designing programs, link up and coordinate messages that are going to the same target audience.
- Plan programs with the team of people who will be involved in implementing the program, including technical, public relations, management, and support staff.
- Don't assume your target audience knows or remembers what a hazardous substance or waste is. Use examples of substances or products.
- Set up a data collection and data management system early in the program so you can do mailings, track trends, create reports, and evaluate effectiveness.
- Integrate technical assistance and compliance into a single program.
- Communicate with other regulatory agencies about their requirements, target audiences, field schedule, permit fees, and interagency coordination to avoid duplication or the appearance of duplication.



## Thurston County, Washington

### Pollution Prevention Materials Available From Jurisdiction

The following documents were developed by Thurston County and are available from the Public Health and Social Services Department:

#### General Documents:

- Background Document for Moderate Risk Waste Planning, 1989
- Moderate Risk Waste Plan for Thurston County, 1991
- Long Range Funding Report: Thurston County Local Hazardous Waste Program

#### Business Pollution Prevention Materials:

- Small Quantity Hazardous Waste Generator Survey: Final Report, 1992
- Making Clean Water Work for Local Businesses: Operation WaterWorks Final Report, 1993 (co-authored)
- Business Pollution Prevention: Profiles of Success, 1993
- Thurston County Nonpoint Source Pollution Ordinance, 1993
- Feasibility of a Low-Interest Loan Program for Business Hazardous Waste Reduction, 1994
- Silver Recovery, 1993

- Compliance with the Nonpoint Source Pollution Ordinance, 1994
- Financing Pollution Prevention, 1994
- Antifreeze, 1994
- Solvents and Parts Cleaners, 1994
- Nine local profiles of pollution preventing businesses, 1993

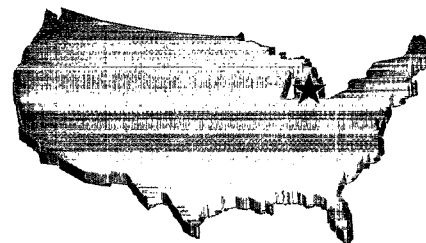
#### Curriculum Guides:

- It All Begins at Home: Household Hazardous Waste Activity Guide (K-6 and 7-12), 1992
- Environmental Car Care - Teachers and Student Packet, 1993
- Integrated Waste Management Curriculum (K-6 and 7-12), 1993 (co-authored)

#### Household Hazardous Waste Materials:

- It All Begins at Home
- Give Excess Paint the Brush Off
- Recipe cards for least-toxic cleaners
- Common Sense Gardening Guides: Aphids, Crane Fly, Root Weevil, Plan Before You Plant, Lawn Care, Understanding Weeds, How Common Sense Gardening Works, and Plant List
- Evaluation of the Thurston County Household Hazardous Waste Education Program (1991-94)

# Washtenaw County, Michigan



## Summary

Washtenaw County's pollution prevention programs include voluntary and regulatory components. The county's voluntary pollution prevention activities involve joint projects directed at business and industry involving a coalition of various organizations, and individual programs such as a non-point source pollution reduction initiative. The Pollution Prevention Inspection Program (P2IP) is a regulatory effort headed by the Washtenaw Department of Environment and Infrastructure Services (DEIS). DEIS Public Works Division P2IP staff inspect business that use, store or manufacture hazardous materials in quantities greater than 56 gallons for compliance with the County pollution prevention regulation. During these inspections, businesses are also informed of applicable state and federal environmental regulatory requirements.

## Program Description

### Strategy

Pollution prevention activities in Washtenaw County can be categorized into two primary areas of focus: 1) Voluntary and 2) Regulatory.

### Voluntary

**Pollution Prevention Coalition:** County agencies

## Demographics

### Jurisdiction:

Washtenaw County, Michigan

### Population:

283,000

### Type:

Urban, rural and suburban

### Contact:

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Director, or Lemuel D. Amen, M.S.,  
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Washtenaw County  
Department of Environment &  
Infrastructure Services  
PO. Box 8645  
Ann Arbor, MI 48107-8645  
Phone: 313/994-6361  
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### Overall Annual Budget of County:

\$73,000,000 (approximate)

### Lead Agency Conducting Pollution Prevention Work:

Department of Environment &  
Infrastructure Services (DEIS)

identified a need for a voluntary approach to pollution prevention (P2) and in 1994, initiated the Washtenaw County P2 Coalition. Community co-sponsors for a county-wide P2 coalition were identified and invited to facilitate initiation of this process. The initial goals were to create a self-sustaining network of organizations involved in P2 efforts, to draft a county-wide vision for P2, and to promote partnerships aimed at expanding P2 options in the public and private sectors.

Coalition meetings are well-attended and well-received by representatives of small and large businesses, institutions, agencies, and community groups with a common interest in reducing pollution. The co-sponsors guide and support the coalition's activities, and have played an active role in hosting and planning coalition meetings, providing outreach, and presenting P2 resources and success stories. Four workgroups are meeting and working to plan and implement joint projects agreed upon by the members of each group. The Department of Environment and Infrastructure Services (DEIS) serves as the lead agency for the coalition. Other County agencies participate in the coalition,

as well as their own P2 programs which are described below.

**Clean Air Act Amendments/ Accident Release Prevention Program:** Washtenaw County's Office of Emergency Management (OEM) and DEIS are con-

## Washtenaw County, Michigan

ducting a joint effort to facilitate businesses' understanding and compliance with Section (112R) of the Clean Air Act (CAA), as amended in 1990. OEM, as the lead agency on this project, provides assistance to local businesses. Participation in this project is voluntary, and regulatory compliance with the Clean Air Act is under federal/state authority.

The CAA Accident Release Prevention Program is being applied to determine the level of Local Emergency Planning Committee (LEPC) services needed to support facilities that use, produce or store some type of hazardous substance in developing risk management plans (RMPs) that are required under the Clean Air Act. In this project, targeted businesses (many of which are located in low-income urban areas) include SARA/Title III facilities and smaller, more at-risk facilities that may not be regulated under SARA/Title III but that may pose a risk.

This is being accomplished by conducting a legislative and regulatory review, assessing the risk and needs of the relevant facilities in the county, and coordinating the efforts of county pollution prevention programs. Project deliverables include a facility database to manage information on all facilities requiring a RMP, and a process management seminar for targeted businesses. An assessment tool is being developed to identify the 500 facilities in the county most in need of assistance.

### **Community Partners for Clean Streams Program:**

The Washtenaw County Drain Commissioner's Office has developed working partnerships with business, industrial, and institutional property owners in the Ann Arbor-Ypsilanti urban area to address non-point source pollution and stormwater runoff issues.

Targeted groups (e.g. automotive care facilities, landscaping firms, and maintenance for large facilities) are invited to attend workshops to learn about: basic water quality issues, the affect of their business and site management practices on water quality, and ecologically sound methods for controlling stormwater runoff specific to each type of operation. Participants enter into partnership agreements and prepare water quality action plans outlining the steps that they have taken and will take to protect water quality. Technical assistance is provided by county staff. Each participating group that develops a plan approved by the county will become a "Community Partner for Clean Streams" and be presented with a window decal, acknowledging their active participation in the program. Each organization will also receive public acknowledgment of participation through media events.

### **Green Acts for Green Backs: Innovative Grant Program:**

In 1994, Washtenaw County DEIS Public Works Division offered small grants to local businesses, non-profits, governments, and individuals throughout the county for projects that demonstrate good ideas for solid waste management and pollution prevention. The first annual "Green Backs for Green Acts" grant program specified three categories under which project proposals could be submitted: Cutting Edge Technology, Market Development, and Model/Educational. The funding is intended to promote innovative practices and technology relating to solid waste reduction and recycling. In April 1995, six organizations were awarded funding.

### **Regulatory**

**Pollution Prevention Inspection Program:** In 1987, Washtenaw County implemented a fee-funded Community Right-to-Know (CRTK) Program to address local concerns regarding hazardous chemicals and to provide a funding source to help meet federal requirements under SARA/Title III. Typically, inspections are conducted at all businesses that use, store or manufacture hazardous materials in quantities greater than 56 gallons. Associated fees to cover the cost of the inspections are graduated and based on aggregate volumes of hazardous materials. Those facilities reducing on-site volumes are assessed reduced fees.

In 1992, the county amended its regulation, renaming it the Washtenaw County Pollution Prevention Regulation (PPR). The county DEIS Public Works Division inspectors enforce the regulation via the Pollution Prevention Inspection Program (P2IP). The primary goals of the P2IP are: 1) to encourage facilities to plan the management of hazardous materials; 2) to promote facility improvements; and 3) to reduce the potential risk of exposure to hazardous substances for the community, via various mechanisms such as pollution prevention.

The strategic approach for implementing the P2IP requires each regulated party to submit an annual report listing all regulated substances and volumes. The focal point of the P2IP is the annual inspection. The inspection also allows county officials to educate regulated facilities and to assist in identifying opportunities for pollution prevention in chemical use, storage, and disposal.

## Resources Used

### Staffing Resources

#### Voluntary:

75% of 2 full time equivalent (FTE)

25% of 1 FTE: supervisory staff

#### Regulatory:

2 FTE: inspection staff

1 FTE: support staff

one half-time supervisory staff

### Expenditures and Funding Sources

**Voluntary:** Annual budget approximately

\$35,000 - \$100,000 per year per program

Supported by grant funds & special funds,  
some general (tax) funds

**Regulatory:** Annual budget approximately \$100,000.

Fee-supported

### Written Materials and Technical Assistance Sources Used

County agencies use a variety of written materials for the design and implementation of its programs. These include: U.S. EPA reports (including *Pollution Prevention Case Studies Compendium* and *Facility Pollution Prevention Guide*); materials generated by the Michigan Office of Waste Reduction and the Minnesota Technical Assistance Program (MNTAP); information from local governments, such as San Diego County; and material from various universities and nonprofit organizations, including the National Pollution Prevention Center at the University of Michigan.

### Public or Private Sector Partners

Partners involved in the P2 Coalition include representatives from:

**Academia:** University of Michigan, Washtenaw Community College, Eastern Michigan University, and the National Pollution Prevention Center for Higher Education

**Large Business:** Ford Motor Co., 3M, and Browning-Ferris Industries

**Small Business:** Milan Screw Products, Saline Valley Fertilizer, and Resource Recycling Systems

**Agriculture:** Washtenaw County Farm Bureau and the National Resources Conservation Service

**Environmental Organizations:** Ecology Center of Ann Arbor and the Huron River Watershed Council

**Economic Development Organizations:** Ann Arbor Area Chamber of Commerce, Dexter Chamber of Commerce, Washtenaw Development Council, Minority Business Owners of Washtenaw County, and the Washtenaw County Institute for Community and Regional Development

**Private Non-Profit Business:** NSF International, and the Environmental Research Institute of Michigan

**Government:** Washtenaw County Emergency Management, W. County Drain Commissioner's Office, W. County Department of Environment and Infrastructure Services, MSU Extension, and the Saline and Milan Mayor's Offices

## Outcome and Accomplishments

### Assessment of Effectiveness

#### Voluntary

As a result of the P2 Coalition, participants agree that county-to-business communication and interactions are improving. Businesses are learning about what P2 resources are available and how to utilize them. Evaluations of coalition meetings have been very positive. The agencies' individual programs have received recognition and active participation from the targeted organizations. Many of these programs are new, therefore results will be more evident in two to three years.

#### Regulatory

As a P2IP, facilities have improved the management and use of hazardous materials every year. For example, more facilities are in compliance with state and federal regulations, secondary containment measures

have improved, the amounts and toxicities of hazardous materials have decreased, and the incidents of releases from fixed site facilities have decreased. Since 1989 to 1994, the percentage of facility sites with a confirmed release of hazardous material has declined from 17 to 6 percent. That change can be attributed to a reduction of on-site volumes of materials, the installation of the appropriate secondary containment strategies at 85 percent of all inspected facility storage sites, and a greater awareness by facility operators, of proper hazardous material management.

### Community and Department Gains

Community awareness of how to incorporate pollution prevention techniques into issues of toxic materials use, containment, and disposal has increased as a result of the county's P2 programs. As indicated, many of the voluntary programs are new and gains are still to be measured.

The P2IP, through its inspections, has helped business owners understand requirements pertaining to them under state and federal laws (e.g., Worker Right to Know, Community Right to Know under SARA/Title III). Because state and federal agencies do not have the resources to complete on-site inspections, they are not in a position to provide on-site enforcement. Hence, those state and federal regulations are often not implemented.

The county-initiated inspections require each business to complete an inventory of all aggregate volumes of hazardous chemicals stored, used, or produced on-site. Reporting requires that a business indicate the highest volumes at any one time during the calendar year. Businesses are offered incentives (reduced fees) to reduce the use of these chemicals, implement product substitution, and handle the materials more appropriately. Additionally, those that come into compliance are eligible for reduced inspection frequency — another mechanism to reduce how often fees are incurred. Any business in the reduced inspection mode, can submit a report form, or a "status sheet", accompanied by a small administrative fee.

### Lessons Learned

One barrier to the P2IP program has been the perception by small businesses that the service duplicates state and federal requirements and that the businesses are unduly burdened by the fees. However, federal and

state agencies often do not have the resources to perform inspections. Therefore, the county program may be the first contact these businesses have with an inspector, making it their introduction to applicable state and federal laws. The county's program serves to facilitate the business community's compliance with state and federal regulations.

The most important lesson Washtenaw County has learned is the importance of opening communication with small businesses and encouraging them to become part of the implementation process. The county has also worked to include small businesses and small business groups in the building of the voluntary-based P2 coalition.

### Pollution Prevention Materials Available From Jurisdiction

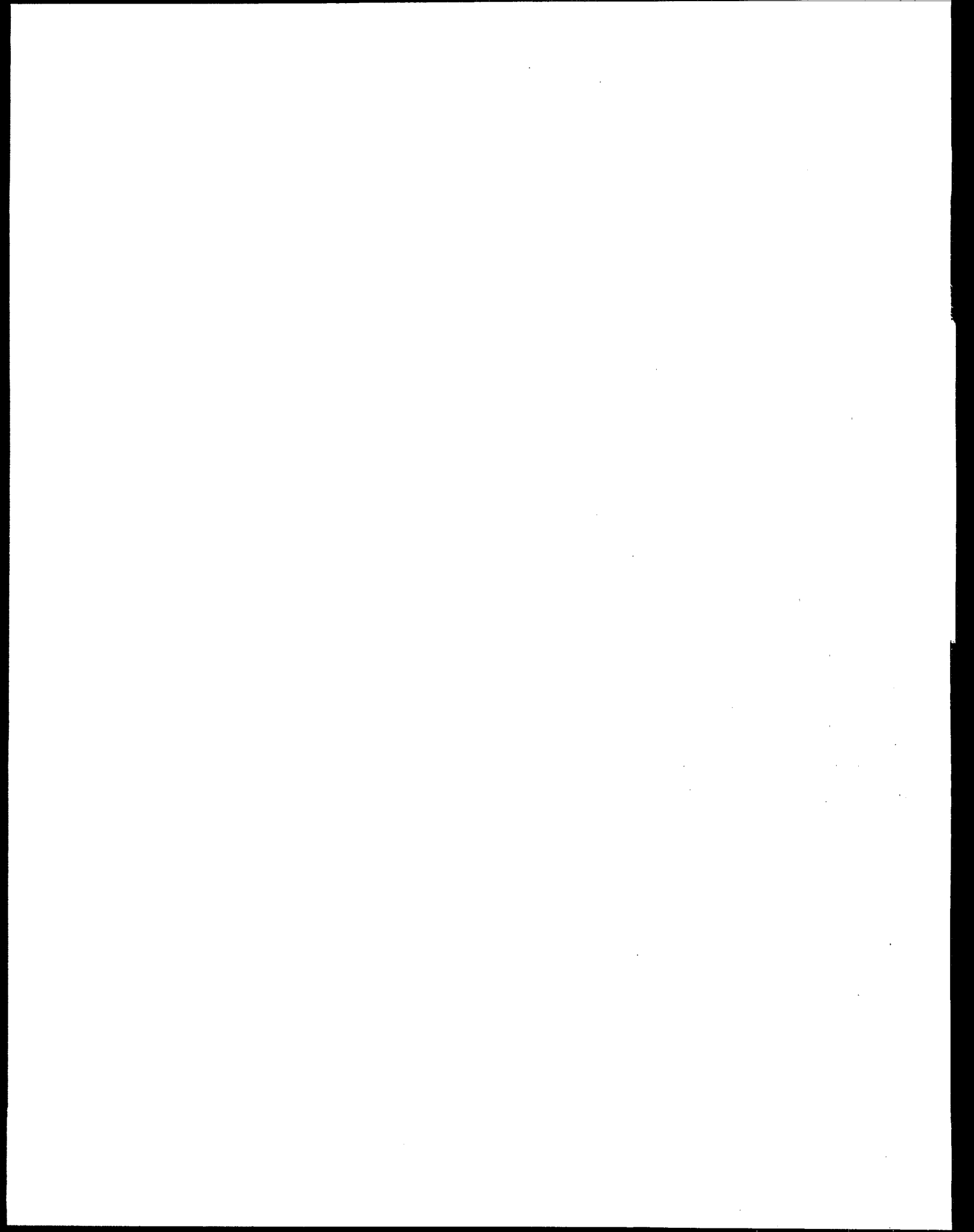
Materials from all the voluntary programs are available and can be acquired by contacting the lead agency. The DEIS staff can provide that information.

For the P2IP, "status sheets" have been developed. The status sheet also functions as a worksheet for completing the SARA/Title III paperwork (Sections 312/313). Additional materials, including copies of the regulation, are also available from the county.

### Additional Comments

Washtenaw County has formed an internal P2 Task Group to coordinate all P2 programs offered by the county agencies. This assists in the county's efforts in creating partnerships for different projects and in preventing duplication of efforts.

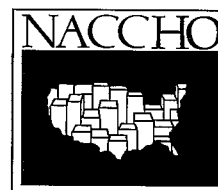
Washtenaw County is also embarking on an internal environmental management systems program that includes an audit of county activities and assessment of how and where to implement more environmentally-friendly practices (e.g., transportation-fleet, lightening, etc.).





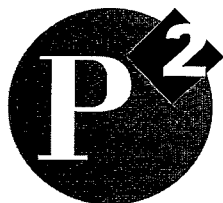
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**The National Pollution Prevention Roundtable**

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**The United States Conference of Mayors/  
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