



Pollution Prevention News

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**SPECIAL
Anniversary Issue**

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The Preferred Option

**William K. Reilly
Administrator,
U.S. Environmental Protection Agency**

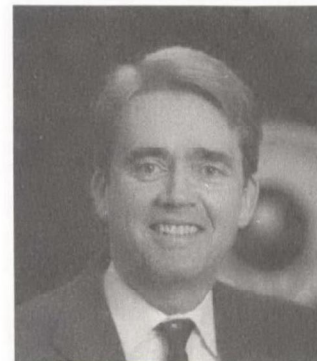
The last few years have seen an explosion in pollution prevention activity and a veritable transformation in the way we at EPA and others have come to understand and pursue our Agency's mission. One year ago, EPA's Science Advisory Board released its report, *Reducing Risk: Setting Priorities and Strategies for Environmental Protection*. One of the report's principal conclusions was that EPA — and the nation as a whole — should make greater use of all the tools available to reduce risk, and among those tools, pollution prevention should be at the top.

If anyone doubted in the past whether prevention was necessary, the news from the environmental front should be sufficiently convincing. Poland's former environmental minister, for example, has told me

that environmental contamination is causing a 15 percent drag on his country's gross national product.

When we focus on treating waste, rather than on preventing waste, new environmental problems tend to outstrip whatever progress we can make.

On the occasion of the third anniversary of EPA's pollution prevention program, I extend my congratulations for the successes achieved thus far, and encourage continued vigor in developing innovative pollution prevention solutions to the environmental challenges before us.



A Look Back and A Look Ahead

Reflections on the Three-Year Anniversary of EPA's Pollution Prevention Program

**Gerald F. Kotas
Director, Pollution Prevention Division
U.S. EPA**

As EPA's pollution prevention program marks its three-year anniversary, it seems an appropriate time to take a look back at our accomplishments and a look ahead at the many issues and challenges that remain.

One of the most gratifying things I've seen in the last three years is how quickly the pollution prevention concept has captured the imagination of people both inside and outside of EPA. Much has been

done in a short time. Each day, EPA can point to new success stories in industry, government, and academia — literally, in all sectors of the environmental community. Likewise, new success stories are happening continuously in the various EPA programs and regional offices and in state programs.

This is not to say that we can accomplish all our environmental objectives overnight. Indeed, we have only recently begun to recognize that some changes will take generations to achieve. Nevertheless, at the

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A Look Back. . .

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three-year mark, there is reason for optimism.

EPA first established a central office for pollution prevention in the Office of Policy, Planning and Evaluation (OPPE) in Fall 1988. Much of EPA's activities in 1988 and 1989 anticipated the passage of the Pollution Prevention Act in 1990.

Legislative Breakthrough

The Pollution Prevention Act, along with the Clean Air Act Amendments passed by Congress on the same day in November 1990, represent a clear breakthrough in this nation's understanding of environmental problems. The Pollution Prevention Act calls pollution prevention a "national objective" and establishes a hierarchy of environmental protection priorities as national policy (see box).

Several items are of particular significance about the Act. First is its establishment of source reduction as the preferred option for addressing the nation's pollution problems. Second is its clear understanding that productivity and economic competitiveness can go hand in hand with environmental quality.

The Pollution Prevention Act also expands the types of phenomena receiving attention — from the *release* of wastes to their *generation*. Thus, the reporting of source reduction information under the Act applies to substances that exit the confines of the production

process, not just wastes that meet the RCRA definition of hazardous waste.

Setting Direction

Formally announced in February 1991, EPA's Pollution Prevention Strategy establishes EPA's future direction in pollution prevention. The strategy indicates how pollution prevention concepts will be incorporated into EPA's ongoing environmental protection efforts and it set up the "33/50 Program" (Industrial Toxics Project), under which EPA is seeking substantial voluntary reductions of 17 targeted high-risk industrial chemicals that offer significant opportunities for prevention. The goal is to reduce environmental releases of these chemicals by at least 50 percent by the end of 1995.

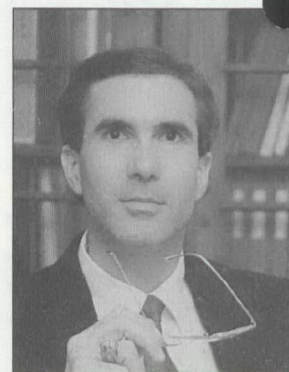
In a relatively short timeframe, every office at EPA has become aware of the new approach and has begun to reshape and re-envision its mandate to promote prevention.

To date, response to the 33/50 Program has been highly positive, with hundreds of companies responding with commitments to reduce their waste generation.

More recently, we have begun the process of drafting strategies for other

sectors beyond industry — agriculture, energy and transportation, federal government, and consumers — which represent pollution

solutions to high-risk environmental problems. My office and others in the Agency are working closely with other federal agencies such as USDA, CEQ, the Department of Energy, and the Department of Transportation, to define specific goals and actions for each of these strategies.



Notable Changes

One of our prime goals in the first few years of the pollution prevention program was to ensure that prevention became an integral part of the mandate of each EPA office. Multi-media source reduction is now promoted as part of the Agency's strategic planning and budget processes. Pollution prevention has been incorporated as a component of EPA's regulatory development course for Agency staff, with special training offered for regulation writers. Specific regulations are being targeted for promoting pollution prevention concepts.

In a relatively short timeframe, every office at EPA has become aware of the new approach and has begun to reshape and re-envision its mandate to promote prevention. EPA's air, water, solid waste, toxic substances and research offices are particularly prominent in this effort. The Green Lights program (see box), the Pollution Prevention Action Plan for the Great Lakes region, the municipal wastewater pollution prevention guidance, and the comprehensive lead strategy are all exciting examples of recent efforts. Cross-program initiatives are attempting to bridge the single-media focus that has been characteristic of many of our efforts in the past. Closer coordination among EPA's

Pollution Prevention Act

Under the Pollution Prevention Act, it is the national policy of the United States that pollution should be prevented or reduced at the source whenever feasible; where pollution cannot be prevented, it should be recycled in an environmentally safe manner; in the absence of feasible prevention and recycling opportunities, pollution should be treated; disposal should be used only as a last resort.

Among other provisions, the Act

directs EPA to facilitate the adoption of source reduction techniques by businesses and federal agencies, to establish standard methods of measurement for source reduction, to review regulations to determine their effect on source reduction, and to investigate opportunities to use federal procurement to encourage source reduction. The Act also authorizes an \$8 million state grant program to promote source reduction, with a 50 percent state match requirement.

... And A Look Ahead

headquarters and regional offices and with the burgeoning number of state pollution prevention programs has also been evident.

EPA's pollution prevention initiatives are characterized by their use of a wide range of tools, including market incentives, public education and information, small business grants, technical assistance, research and technology applications, as well as the more traditional regulation and enforcement. In addition, there are other significant behind-the-scenes achievements: identifying and dismantling barriers to pollution prevention; laying the groundwork for a systematic prevention focus; and creating advocates for pollution prevention that serve as catalysts in a wide variety of institutions.

Not all of these changes come easily. But here are some often-unheralded examples that we are particularly proud to note:

- **AIPP.** In 1989, EPA established the American Institute for Pollution Prevention in cooperation with the University of Cincinnati. The Institute provides a bridge between EPA and industry and acts as liaison between professionals in the field of pollution prevention and those who need to employ prevention techniques.
- **EPA Regional Offices.** EPA's 10 Regional Offices represent the Agency's front line in pollution prevention. Each Regional Office has a pollution prevention staff that coordinates and initiates projects. Some of the most innovative prevention work is taking place at the regional and state levels.
- **Research.** Current initiatives of EPA's Office of Research and Development include the WRITE program (Waste Reduction Innovative Technology Evaluation) whereby EPA has entered into cooperative agreements with five states to evaluate some 30 waste reduction technologies. Technology transfer is also a goal of the Pollution Prevention Information

Clearinghouse which operates an electronic bulletin board (PIES) and other services (call 703-821-4800 to get hooked up!).

- **Enforcement.** An important EPA policy statement strongly encourages Agency negotiators to include pollution prevention conditions in enforcement settlements when feasible. In the first such case in 1990, an Ohio manufacturing company

which was in violation of a notification provision of the Toxic Substances Control Act, agreed to pay a civil penalty and institute a pollution prevention project at one of its facilities. The \$525,000 project should result in waste reduction of a half million pounds of waste material annually.

- **Education and Training.** As we

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Siemens Corporation

Green Lights Update

More companies and organizations continue to join the roster of participants in EPA's energy-efficiency Green Lights program. At the end of September, the program had:

- 114 corporate partners, an addition of 55 since May,
- Four government partners, the States of California, Florida, Maryland, and Oregon,
- 166 allies, including lighting management companies, manufacturers, and utilities, and
- Commitments to use energy-efficient technologies to light a total of 1.6 billion square feet.

Green Lights staff figure that every time an ordinary incandescent light bulb is replaced with an energy-efficient compact fluorescent bulb, carbon dioxide emissions are reduced by 300 pounds a year. When Green Lights' current partners meet their commitments, their carbon dioxide savings will total over 6.7 million tons annually, sulfur dioxide savings will be 49,000 tons a year, and nitrogen oxide savings will be 26,000 tons.

Utility bills are being reduced as well. Elkhart General Hospital in Indiana reports saving \$100,000 per year on utility bills through its conversion to high-efficiency lighting, with only 30 percent of the conversion completed.

Soon, EPA will be offering a computerized decision support system to assist partners in planning upgrades for maximum cost-effectiveness and energy savings. For more information, contact the Green Lights Information Center at 202-479-6936.

Interviews

On the occasion of the third anniversary of EPA's Pollution Prevention Program, we asked representatives of different sectors of the pollution prevention world to comment on the progress that's been made and the challenges that lie ahead.

Denny Beroiz Director of Environmental Resources B2 Division of Northrop Corporation

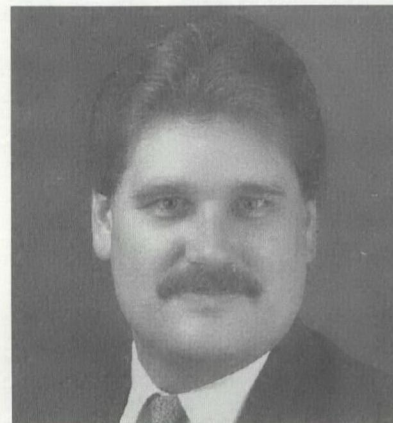
Several years ago, Ollie Boileau, now president of Northrop's B2 Division, stood up and said, "We're going to go to zero discharge." This decision was criticized by industrial types and science types who said it was a stupid goal, because it's technically unfeasible. But we weren't talking about technology, we were talking about moving people, and in moving people you have to give them a simple goal.

We've got to get away from the end-of-pipe approach and talk about patterns of consumption within our society. If it were a high enough national policy, then I think the message would get to the CEOs, who really have it in their power, as ours did, to write a policy that says, "We're basically going to get out of the business of pollution."

That was very compelling. It really changed the way that our production of waste was done. In 18 months we've reduced over 50 percent of our waste, simply based on a goal that the CEO set.

Industry should be given opportunity to demonstrate a self-governance program that meets regulations. Because I firmly believe that regulation is an extremely poor substitute for leadership.

Also, there needs to be more rational and more informed decision making before we go out and attack Chemical A or B, or Process A or B. We've got to make the shift to the long-term view, that we don't want to engineer any more products with X, Y or Z in them, much more along the lines of EPA's 33/50 program and other longer-range



concepts that are coming out. Environmental persistence, recyclability, ease of materials separation and recovery—those concepts are not in our design criteria, but if someone were to say, "They'd better be in industry's design criteria," then industry would start today working toward that solution.

Joanna D. Underwood President, Inform, Inc.

Over the last three years we've seen a dramatic expansion of interest and government infrastructure for addressing pollution prevention. It's become very clear in government and the business community that end-of-pipe measures are costing us too much.



In 1986, Inform did 29 case studies of industrial plants, and they showed almost no efforts in pollution prevention. We've just gone back to those same plants five years later and found that some companies are taking a broad and serious approach to pollution prevention, with well-articulated corporate policies, careful waste audits, incentives to workers, and so on. By forging ahead, those companies have also saved hundreds of thousands of dollars.

The encouraging thing is how much potential environmental and economic gain is out there. The opportunities are even more extensive than we thought, and we hope our new report will be a spur to other companies that haven't made much progress. It's our hope that with this remarkable momentum for prevention, crucial changes can come about and we look forward to seeing that progress reflected in EPA's TRI data.

Robert Pojasek Vice President, Geraghty & Miller, Inc. 1991 Chairman, American Institute for Pollution Prevention

EPA's Office of Pollution Prevention and the Office of Research and Development have sponsored the startup of the American Institute for Pollution Prevention. We represent about 22 associations, both professional associations and trade associations.

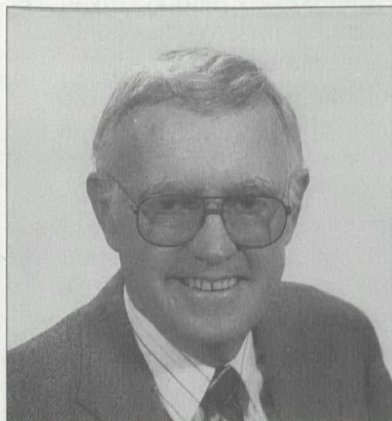
I think communication is the biggest challenge today in pollution prevention, and it's becoming even more important now, because of three factors: the new state programs that require pollution prevention planning, EPA's 33/50 program, and the enforcement programs where pollution prevention plans can be used as a mitigating factor in penalties. So I think the need for

Interviews

● Paul O'Connell

Deputy Administrator, Cooperative State Research Service, U.S. Department of Agriculture.

The Sustainable Agriculture and Research Program (formerly known as LISA) program started about four years ago, and we've now cooperated



with about 1,600 farmers. One of the key things we did with this program was to have in each of four regions representatives of producers, scientists, extension folks, nonprofits, and in some cases, environmental groups, and they chose projects for funding. That was a very successful model.

People assume that farmers are going to reduce their net return if they farm with more concern about the environment. But we've pulled together information from many different research studies showing that producers can maintain their bottom line while being more in harmony with nature.

Many of the farm and commodity programs give incentive to farmers to

maintain maximum yield rather than maximum net return. And quite frankly, there's a lifestyle barrier. If you grow just one or two crops, you don't have to spend a whole lot of time on the farm.

We have every indication that farmers are looking more honestly at alternatives. And a number of states offer loans and other programs to actively encourage farmers to look at alternative techniques. Most of the leadership for this kind of thing is coming from the states. And pesticide companies are beginning to move in the direction of more environmentally benign products, developing resistant plants and animals, and so on. There has been a topping out of the use of the more toxic chemicals.

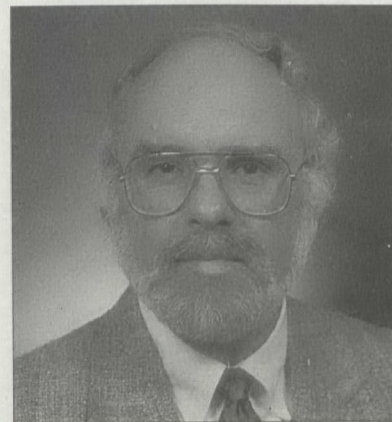
information is just going to skyrocket.

AIPP's charter is to take EPA information and disseminate it expeditiously to our members so that the Agency can tap into the broader distribution channels that the associations have. We're also trying to foster communication between the associations themselves, with a quarterly information exchange. We have a number of our member associations doing their first national pollution prevention efforts—we're trying to plant those seeds and nurture that growth.

● Dr. James Allen
Chief, Alternative
Technology Division,
Dept. of Toxic
Substances Control,
California EPA

In California, I think we've had a lot of success in working with industry and local government over the last several years. For example, we identified incinerable hazardous waste as a major shortfall and focused a state program on reducing those wastes by 50 percent by the end of 1992. We've been working very closely with industry to assist them in voluntarily reducing their incinerable hazardous waste—providing technical assistance, elevating their requests for permit modifications to the head of the queue, and generally sharing information with them.

This exemplifies the way we're focusing our efforts by identifying key waste streams. I think the EPA 33/50 project is an example of using the same pattern of targeting key chemicals of



concern and working with industry on a voluntary basis to reduce those waste streams. I have great optimism that these voluntary approaches, supplemented by command-and-control systems, are going to pay great dividends.

EPA's Pollution Prevention Office is facilitating a lot of contact among the state and local governments, encouraging and facilitating a lot of information sharing, and that's very much appreciated. I think we probably need a lot more attention given to developing case studies and other information about pollution prevention that anyone can access and get in hard copy. I can see EPA playing a much bigger role as a technology clearinghouse in this area.



Pollution Prevention . . .

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announced in last month's issue of *Pollution Prevention News*, EPA has established a national pollution prevention center at the University of Michigan which will develop curriculum for engineering, business, and other university educational tracks, and disseminate the material to other universities nationwide. A new Office of Environmental Education also has been set up at EPA with pollution prevention forming the core of the office's approach.

Looking Ahead

As progress is made on the technological side of pollution prevention, there is a growing recognition of the need for prevention to become an integral part of our basic philosophy of environmental protection. Pollution prevention must become the strategy of first choice in addressing any environmental problem. Creating this new "pollution prevention ethic" requires a shift in the perspectives of those whose activities affect the environment. Without question, this is a massive undertaking, and one that will continue to challenge the Agency and all of society in the years ahead.

Central to the Pollution Prevention Act is the premise that source reduction of wastes and other pollutants is complementary to improvements in efficiency and competitiveness. For the most part our pollution prevention efforts to date have involved easily accessible measures — such as better housekeeping and inventory control — that save money and resources with fairly short payback periods. We have found that once businesses clearly see the volume of materials they are routinely wasting through releases to the environment, they begin to make the link between source reduction and efficiency improvements.

Nevertheless, more fundamental changes will be needed in the future to keep our environment healthy. Many of these changes will take time, and some will require more costly and far-sighted investments than has been the case until

now. Major pollution prevention advances will need to be built into our infrastructure (for example, in designing new plants, assembly lines, transportation networks, etc.), in the selection of less or non-toxic inputs, and in the manufacture of less toxic products. I believe that moving in the direction toward "clean sustainable technologies" will ultimately be more cost-effective than sole reliance on treatment/disposal. It will however, require significant shifts in investment and in thinking.

One question that EPA will face is how aggressively to act in order to ensure that change occurs.

The institutional and informational barriers to such investment shifts continue to be formidable. Many companies still see investment in pollution prevention as risky, particularly after substantial investments have been made in pollution control technologies. Because we continue to measure compliance in single-media terms against finite standards, multi-media prevention approaches are not necessarily promoted. We need to

rethink how to encourage multi-media gains through continuous improvements incorporated in our rules and permits.

One question that EPA will face is how aggressively to act in order to ensure that change occurs. For example, EPA is attempting, through education and technical assistance, to bring all companies in an industry to a higher level of pollution prevention. My office, in conjunction with OSW, has done this with the dye industry.

Another approach that has already been applied in some EPA programs is to stipulate in regulations that the most advanced pollution prevention technologies will be preferred as Best Available Technology when negotiated in permits. This approach would offer a competitive advantage to advanced permit-holders, compensating them for their investment in innovation or pollution prevention technology and encouraging the rest of the industry to change operations in order to stay competitive.

For now, it is clear that the problems must be tackled on several fronts — first, through the funding of research, development, and demonstration projects that will lay the technical basis for preventive approaches. Second, through continuous improvements in

In the States

Before 1985 there was only one state law which dealt with any aspect of pollution prevention; today, almost every state has some type of a pollution prevention law, policy, or program. Over half the states have passed pollution prevention laws of some type and more are in the pipeline. In 1989, Massachusetts and Oregon broke new ground by enacting legislation which emphasizes toxic use reduction and also requires certain facilities to conduct comprehensive, ongoing pollution prevention planning. As of April of this year, another 13 states had followed suit with facility planning statutes. All of the legislation adopts

the environmental management hierarchy supported by EPA. Seven states have established numerical pollution prevention goals.

State pollution prevention programs have mushroomed over the years, partly in response to EPA grant funding and cooperation. Many state programs offer technical assistance to industry (e.g., telephone assistance and on-site audits), as well as serving as clearinghouses for technical and public information. Other state programs also include financial incentives (e.g., tax credits, loans, etc.) for pollution prevention, regulatory functions, and facility planning.

... A Three-Year Perspective

the regulatory and policy "climate" to further encourage innovation and pollution prevention. Third, by putting in place economic incentives that reward innovation in this area, rather than discouraging it. And, fourth, by offering public recognition to organizations that take a leading role in pollution prevention.

More broadly, we must realize that the shift to pollution prevention is relevant not only to government inspectors and regulation writers and company executives. It is relevant on

the plant floor, in the shipping department, in every office and workplace, in every professional training course, in our universities, high schools, elementary schools, and in our households.

Pollution prevention is not merely a strategy for environmental protection; it is part of a strategy for protecting our children, our fellow workers, and our quality of life.

Last year, President Bush remarked in a speech:

To those who suggest we're only trying to balance economic growth and environ-

mental protection, I say they miss the point. We are calling for an entirely new way of thinking to achieve both while compromising neither.

This is precisely the message of pollution prevention. Economic growth and environmental stewardship go hand in hand; a healthy environment is the basis for a healthy economy, both in our own lifetimes and for future generations. I consider it a real honor to lead this program for the Environmental Protection Agency.

33/50 Program

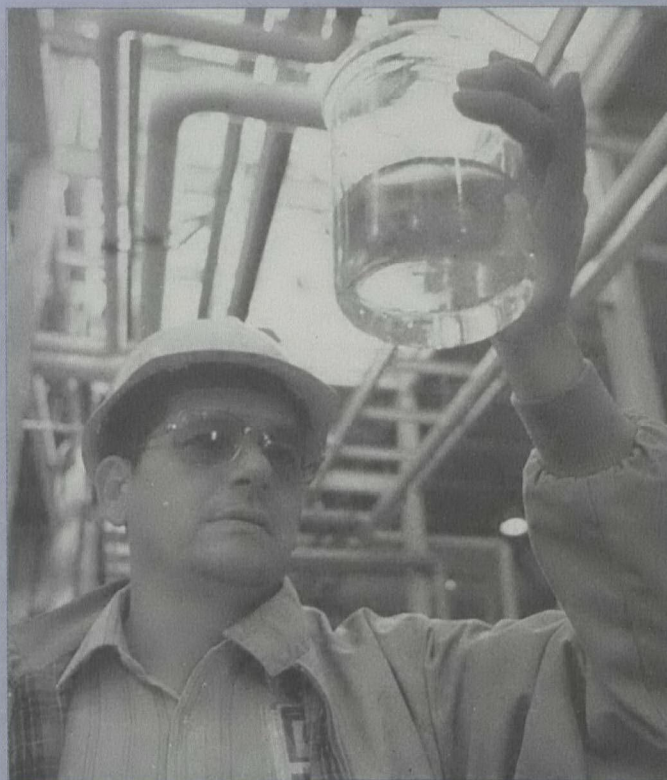
"Our nation is clearly at a crossroads regarding the scope and future actions necessary for the protection of the environment and the economic well being of the nation's industry. We believe that your voluntary program sets the right tone."

—Martin Marietta

Martin Marietta Corp. has instituted a corporate-wide initiative to achieve an overall reduction of at least 49% by the end of 1992, and 76% by the end of 1995 for all 33/50 chemicals. Additional goals include an 87% reduction in the generation of hazardous waste and in the release of all toxic chemicals by the end of 1995. In his letter informing EPA of these commitments, Norman R. Augustine, Chairman and CEO of Martin Marietta, noted:

"We have gained some useful insights as a result of our long-standing internal programs and believe that there are three lessons which you may find of value in your discussions with other members of industry:

1. Involve the people responsible for achieving the goal in setting the goal. . . This approach . . . results in strong operator involvement and commitment.
2. But, a goal must be set and commitments made.
3. From our experience, we have concluded that substantial pollution prevention and/or reduction can be achieved cost effectively."



Environmental specialist Dan Messer of Martin Marietta Astronautics Group (Denver) examines a sample of the plant's clear wastewater effluent. A new integrated treatment plant has eliminated over 1500 tons of waste annually.

EPA's 33/50 Program calls for voluntary industry reductions of toxic wastes, aimed at achieving an overall national reduction of 33 percent by 1992, and 50 percent by 1995. The 17 high-priority toxic chemicals included in the program accounted for 1.4 billion pounds of releases and transfers in 1988; a 50 percent reduction would eliminate 700 million pounds by 1995. Thus far, close to 300 companies have committed to an average reduction of 50 percent by 1995, for an overall reduction commitment of at least 262 million pounds.

Pollution Prevention in EPA's Regional Offices

Valdas V. Adamkus
Administrator, Region 5

Over the past three years, even the most devoted advocates of pollution control and the most skeptical questioners of the need for an EPA Pollution Prevention Initiative have come to see the benefits of pollution prevention. This change in attitude has partially resulted from observing successful pollution prevention projects take place. Attitudes have also changed because many EPA employees realize that pollution prevention concepts reflect their original reasons for wanting to work for the Agency — to protect the environment and sustain ecological integrity.

The Regions, in partnership with the Pollution Prevention Division, have brought about a multitude of activities:

- One of the Agency's "2% set-aside" projects was to develop a pollution prevention curriculum for kindergarten through twelfth grade. All regions have been actively involved in this project, with Region 7 providing overall leadership. Phase I, which involved surveying available curricula and assessing needs, has been completed. Phase II, the actual curriculum development, is well underway, with the first two mod-

ules, Drinking Water and Recycling, ready for implementation.

- A Pollution Prevention Training Committee, with representation from headquarters and all regions, has been charged with integrating pollution prevention into all aspects of EPA's activities. Following successful "train-the-trainer" sessions, some regional pollution prevention coordinators have formed their own training committees. Appropriate pollution prevention concepts are now included in training courses for permit writers, inspectors, regional counsel, and enforcement staff.
- The Great Lakes Pollution Prevention Action Plan is being implemented by the eight Great Lakes States, Regions 2, 3, and 5, and the Great Lakes National Program Office. The action plan encompasses a number of initiatives, including: strong cooperative measures by the states of Minnesota, Wisconsin, and Michigan to prevent pollution of Lake Superior; a pilot program with New York State to reduce nonpoint source pollution in urban areas; and a public/private initiative with Chrysler, Ford, and General Motors to implement prevention programs in their manufacturing plants.

- In an effort to achieve source reduction in geographically focused areas, Regions 5 and 7 and the States of Illinois and Missouri have held "mini-33/50" meetings. These meetings convene senior management from companies identified as large emitters of chemicals on the Toxics Release Inventory. At the meetings, the goals of the program are explained and the companies are invited to participate. In July, the Chemical Manufacturing Associations of both Missouri and Illinois volunteered to organize the participating companies, document their commitments, and track progress.

One of the most exciting things about this last example is to watch how environmental action in the industrial sector takes off when it is peer-driven and community-focused. The peer pressure of other companies and trade associations can be a powerful incentive for a company to do more for the environment. Companies are starting to see that the "clients" for environmental improvements are in their communities, not the regulatory agency. While these shifts in perspective may seem small, they form the framework for a responsible and cooperative approach to pollution prevention.

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