

Executive Summary

Pollution prevention first emerged as a watchword for environmental protection in the work of Dr. Michael Royston nearly 20 years ago. Royston's book, "Pollution Prevention Pays," advanced an idea that has become the basis for an enormous range of activity — that preventing pollution, rather than controlling it or cleaning it up, could provide both environmental and economic benefits. Environmental protection and economic progress could be complementary, not competing, goals.

Pollution Prevention 1997: A National Progress Report highlights activity in the pollution prevention arena. This report is a sequel to the first such report, issued six years ago (*Pollution Prevention 1991: Progress in Reducing Industrial Pollutants*). Much has changed in that short period of time. The level of activity in pollution prevention has mushroomed, the concepts underlying pollution prevention have become more widely disseminated, and creative solutions and technologies have emerged to deal with complex problems. Pollution prevention is on the move, from the boardroom to the classroom and from the statehouse to the community center. If there is one overarching and encouraging change in the last six years, it would have to be this growing enthusiasm for pollution prevention, particularly in education. The spread of pollution prevention to elementary schools and high schools, and the interest in "greening" university campuses on the part of students themselves are among the most hopeful signs for the future.

Part of the resurgence of interest in pollution prevention reflects the common sense understanding of most people that it is easier to prevent problems than to fix them. This common sense understanding is reflected in the environmental management hierarchy of the Pollution Prevention Act of 1990, in which Congress established as national policy that:

- Pollution should be prevented or reduced at the source whenever feasible;
- Pollution that cannot be prevented should be recycled in an environmentally safe manner whenever feasible;
- Pollution that cannot be prevented or recycled should be treated in an environmentally safe manner whenever feasible; and
- Disposal or other release into the environment should be employed only as a last resort and should be conducted in an environmentally safe manner.

Environmental challenges have not gone away in the last six years. Increased population and consumption patterns threaten to outpace the gains achieved through environmental statutes. Persistent and bioaccumulative toxic chemicals are found in the environment with long term effects that we are only beginning to understand. Waste treatment technologies sometimes transfer pollutants from air to water to land or vice versa. A legacy of waste sites presents frustrating challenges for remediation, while dispersed and nonpoint sources of pollution represent some of the most intractable problems for

restoring and sustaining environmental quality. Pollution prevention is a primary tool for dealing with all of these challenges.

The intent of this report is to highlight some of the widely differing activities that can prevent pollution, and to give readers a sense of the creativity and diversity of participation in pollution prevention. Given the scope and pace of activity, we have not tried to present a comprehensive picture of progress across the country. (In the interests of space, we have left international activities out of the report entirely, although we recognize that prevention approaches are not confined to this country.) The selection of material inevitably reflects an EPA perspective. For this reason, we are particularly grateful for the perspectives of a distinguished group of guest commenters, who are dedicating much of their professional lives to pollution prevention. We are delighted to hear their voices and to have this document strengthened by their views.

While this report points to the great strides that have been made in developing and implementing pollution prevention programs, there is still much to be done in preventing pollution itself and measuring progress. We hope that readers will come away with a renewed appreciation of the value of prevention, as well as ideas and new approaches that they can consider adapting to their own situations.

Pollution prevention is potentially the most *effective* method for reducing risks to human health and the environment, because it is:

- the surest way to avoid the inadvertent transfer of pollutants across media that may occur with end-of-the-pipe control approaches,
- the surest way to eliminate the risks that are inherent in any release of pollutants into the environment, and
- the surest way to protect natural resources for future generations, by avoiding excessive levels of wastes and residues and by minimizing the depletion of resources.

Pollution prevention is also potentially the most cost-effective method of environmental protection, because it:

- reduces raw material and energy losses,
- reduces the need for “end-of-pipe” treatment and disposal technologies, and
- reduces long-term potential liabilities associated with releases into the environment.

Each of the chapters in this report discusses the pollution prevention activities of a particular sector of society (summarized below). Guest commentaries are included in each chapter of this report, representing organizations as diverse as the National Association of Counties, the Dow Chemical Company, the Department of Defense, and the North Carolina Department of Environment, Health and Natural Resources. All parts of society have an interest in preventing pollution — state and local governments, educational institutions, community groups, non-profit organizations — and each group has pollution prevention advocates. Al-

though their specific issues may differ, one thing becomes clear as you read what they have to say — we share a common goal in preventing pollution.

Chapter One — Promoting Prevention at EPA

Dr. Lynn Goldman, Assistant Administrator for EPA's Office of Prevention, Pesticides, and Toxic Substances (OPPTS), introduces this chapter, observing that "pressures on the environment are on the rise, in the United States and around the world." Dr. Goldman comments on the connection between the move to reinvent government and pollution prevention, noting that both initiatives have the ability to "save resources that can be devoted to further environmental protection." The remainder of this chapter is organized around the seven themes that have provided the focus for the Agency's activities in prevention as identified by Administrator Carol Browner in her 1993 Pollution Prevention Policy statement.

- *Incorporating pollution prevention into the mainstream work of EPA.* Much of what EPA does involves promulgating, implementing, and enforcing environmental regulations. To encourage regulated entities to undertake pollution prevention, this mainstream work of EPA must be focused on prevention. The Agency has undertaken a concerted effort in the past six years to find the best ways to incorporate prevention into regulations and permitting, through such efforts as the Source Reduction Review Project and EPA's Common Sense Initiative. EPA has also looked inward, at activities in its own facilities, and committed to taking advantage of prevention opportunities.
- *Building a national network of prevention programs.* EPA cannot force or encourage pollution prevention on its own; rather it must work with state and local governments to develop a national network of prevention programs that will assist regulators at all levels of government in promoting pollution prevention. EPA is providing funding support, technical assistance, information dissemination, and forming federal/state/local government partnerships to focus efforts on pollution prevention as the national goal for environmental management.
- *Pioneering cross-media prevention programs, representing new models for government/industry interaction.* Voluntary programs such as *Partners for the Environment* are EPA/industry interactions aimed at educating industry, citizens, state and local governments, and other stakeholders on ways in which they can participate in pollution prevention. These partnerships include the 33/50 Program, Climate Wise, Green Lights, WasteWi\$e, Design for the Environment, Project XL, Environmental Accounting, WAVE (Water Alliances for Voluntary Efficiency), and Pesticide Environmental Stewardship.
- *Establishing new federal partnerships.* EPA is working with other federal agencies to promote pollution prevention across the federal government. The partnerships involve establishing policies, implementing programs, managing facilities, and acquiring goods and services.

- *Generating environmental information on pollution prevention.* One key to pollution prevention is access to information on pollutant sources, types of pollution generated, and technologies that can help prevent pollution at the source. Programs such as the Toxics Release Inventory (TRI) yield information for industry, government, and communities on major types of releases, the industrial and government facilities that are releasing them, and the environmental media into which the pollutants are being released. Environmental information can be a powerful tool to drive purchasing decisions. EPA's Consumer Labeling Initiative is examining ways to provide consumers with better environmental information, including improved product labels.
- *Developing partnerships for technological innovation in pollution prevention.* EPA's partnerships with industry and universities are developing new technologies for future pollution prevention efforts. These partnerships include the Green Chemistry Challenge and an Environmental Leadership Program, both of which support facilities that have volunteered to demonstrate innovative approaches to pollution prevention. EPA's Office of Research and Development has invested heavily in developing and analyzing prevention technologies.
- *Changing existing federal laws to encourage pollution prevention as the preferred method for reducing risks to health and the environment.*

Chapter Two — Looking at Industry

Although pollution prevention has spread to a wider audience, industry remains at the center of pollution prevention activities. Studies have shown that the economic benefits are compelling arguments in favor of pollution prevention, but only when managers are able to see the cost savings that pollution prevention would bring. Environmental accounting is a key factor in demonstrating to businesses the value of prevention.

One starting place for considering industrial pollution prevention is the TRI maintained by EPA. TRI data, which are collected and published annually, show a steady decline in the volume of toxic chemicals released to the environment by the manufacturing sector. Since 1988, the year TRI reporting was first required, releases of hazardous substances have decreased by 44 percent, although the volume of waste generated has increased, attributable at least in part to an improving economy and, therefore, increased production. One of EPA's best-known voluntary programs, the 33/50 Program, had a goal of reducing releases of 17 selected chemicals by 33 percent as of 1992, and 50 percent by 1995. This program achieved the 1995 goal a year ahead of schedule.

Companies that serve as models for pollution prevention responses have common elements, beginning with strong management support and commitment. Five large corporations fostering prevention are highlighted: Monsanto and Union Carbide, leading

chemical manufacturers; Public Service Electric and Gas, a utility that used materials management to yield pollution prevention returns; AT&T, which has made innovative use of environmental accounting methods to further its pollution prevention goals; and Home Depot, one of the most active retailers promoting a pollution prevention agenda among its clients and staff.

While larger companies frequently have both the financial and technical resources and expertise in-house to implement pollution prevention practices, smaller businesses may have a greater need for assistance. These businesses may find it difficult to identify opportunities for pollution prevention in their processes and products and may also have fewer resources available to implement the changes, whether in equipment, accounting practices, or other areas. Five examples of successful small businesses are described, along with information on federal and state programs that are available to assist small businesses, including EPA's Small Business Compliance Assistance Centers and state Small Business Development Centers.

Industry pollution prevention initiatives go beyond changes in manufacturing processes to include product stewardship programs to reach suppliers and customers with a pollution prevention message; working with communities and stakeholders to create more sustainable products and expand market share; and selling "green" or environmentally-preferable products. Innovative ideas and technologies in pollution prevention, ranging from new soldering process for circuit boards to using ultraviolet light to coat beer cans (thereby eliminating emissions of volatile organic compounds), conclude the chapter.

Guest author Edwin L. Mongan of DuPont observes that the key to future success lies in cooperative efforts involving companies, local communities, regulatory agencies, and environmental groups. Craig Doolittle of the Dow Chemical Company points out the importance of prevention for global competitiveness, and highlights the value of "resource productivity" — using less raw material to make more product with less waste. Both authors emphasize the importance of flexible, performance-based environmental regulatory programs, and the need to integrate business and environmental management systems. Marc J. Epstein of INSEAD focuses on three specific tools for improving corporate environmental performance: capital investment decision-making, cost management, and performance evaluation.

Chapter Three — The Role of Other Federal Agencies in Prevention

The federal government is the largest single buyer of goods and services in the United States, and the largest property-owner. In its varied roles as purchaser of products, facility manager, regulator, and policy maker, the federal government is uniquely situated to encourage pollution prevention through the example of its own actions. Federal agencies have become substantially more active in pollution prevention over the last six years, under the guidance of legislation and a number of Executive Orders. This chapter highlights the varied pollution prevention activities of 11 federal agencies:

- The U.S. Department of Agriculture’s Sustainable Agriculture Research and Education Program provides competitive grants for research, education, and extension projects in four regions of the country. The projects help farmers reduce pesticide use, manage wastes, and reduce energy consumption.
- U.S. Agency for International Development (U.S. AID) operates an Environmental Pollution Prevention Project which focuses on locally sustainable pollution prevention programs for urban and industrial waste in developing countries by providing technical assistance for diagnosing problems, training, information dissemination, and assistance in program development.
- The Department of Commerce’s National Institute of Standards and Technology is assisting industry in technology development through four programs: (1) Advanced Technology Program, which provides cost-shared grants for high-risk technologies with commercial potential; (2) Manufacturing Extension Partnership for small and mid-sized companies; (3) collaborative laboratory research with industry; and (4) the Malcolm Baldrige National Quality Award outreach program.
- The Department of Defense (DoD) engages in numerous pollution prevention activities affecting both military installations and weapon systems. As a major user and generator of hazardous substances, DoD has focused on reducing the use of these chemicals in its own facilities and by its suppliers. Life-cycle assessment is an integral part of these projects.
- The Department of Energy (DOE) also uses, generates, and releases a large amount of hazardous substances; its recent successes in addressing this problem have earned DOE an “Environmental Champion” award. Each facility is responsible for developing pollution prevention goals and determining the best method for achieving them. DOE is also working with its contractors to encourage and assist them in implementing similar pollution prevention efforts.
- The General Services Administration is one of the largest purchasing units of the government and, with EPA, is piloting several projects to evaluate and distribute information on environmentally-preferable products.
- The Department of the Interior is approaching pollution prevention and waste minimization at the Bureau level. Organizations such as the National Park Service and the U.S. Geological Survey are proceeding with plans to reduce the amount of toxic materials used, stored, and disposed.
- The National Aeronautical and Space Administration’s (NASA) pollution prevention strategy has resulted in a significant reduction in releases of TRI reportable substances over the last few years. NASA is using facility-specific plans to promote and implement pollution prevention goals.
- The U.S. Postal Service’s Waste Minimization/Pollution Prevention Program has resulted in a 76 percent decrease of solid hazardous waste generation since

1992. Changes have occurred in the painting of service vehicles, the use of dry cell batteries, recycling of mail trays and pallets, and numerous other areas.

- The Department of Transportation (DOT) is moving on several fronts to integrate pollution prevention into its activities. Reductions in energy use by encouraging walking and bicycling, use of recycled materials in asphalt, wetlands mitigation, and decreased use of polluting substances are some of DOT's initiatives.
- Through the "Greening of the White House" project, President Clinton has instituted numerous changes in the operations of the White House to transform it into a model for energy efficiency, waste reduction, and environmental protection.

Guest author Fran McPoland, the Federal Environmental Executive, highlights the challenges of Executive Order 12873: waste reduction, increased recycling, and procurement of environmentally-preferable products and products with recycled content. Sherri Goodman with the Department of Defense points out the accomplishments of DoD in environmental protection, and emphasizes its goal of continuous improvement in environmental performance through new technologies, new partnerships, smart business decisions, and an emphasis on eliminating pollution at its source. Christine Ervin, writing on behalf of the Department of Energy, also points out both the strengths and the limitations of existing environmental paradigms in the face of growing population and resource demands, and maintains that the future belongs to those who best integrate resource efficiency into products and factories.

Chapter Four — Preventing Pollution at the State and Tribal Level

States have been in the forefront of innovation in pollution prevention. State activities have shifted over the last six years, from legislation — in 1992 over half of the states had passed some form of legislation promoting pollution prevention — to implementation issues, integration of pollution prevention into existing regulatory programs, and attempts to measure progress in pollution prevention.

Some states administer their pollution prevention programs through regulatory agencies with media-specific offices such as air, water, or solid waste. Other states also involve nonregulatory agencies, such as university-based technical assistance programs, a small business program, and a technology transfer foundation. Implementing these programs involves a variety of approaches including technical assistance and outreach, mandatory facility planning, and regulatory integration. At least 40 states offer confidential, on-site pollution and waste assessments for small, and sometimes larger, businesses. Over 30 states operate information clearinghouses on pollution prevention and 30 states have some form of pollution prevention facility planning program. States also offer hotlines to provide specific information and answer questions, computer searches to provide up-to-date information, research on specific pollution prevention techniques, workshop and training seminars, publications, and grants and loans,

particularly to small businesses. States are also incorporating pollution prevention into regulatory activities such as enforcement settlements, permitting, compliance inspections, and waste management. Pilot projects in Massachusetts, Ohio, New Jersey, Indiana, and Illinois are described in this chapter.

As state pollution prevention programs look ahead, they face two primary challenges. The first is to evaluate and measure the effectiveness of their technical assistance and outreach efforts, in terms of actual pollution prevention results at the company level. Second is the ongoing need to integrate pollution prevention into state regulatory programs.

Tribal governments have only recently been able to consider, both economically and technically, pollution prevention as an alternative to end-of-pipe controls. Although most tribal governments are still in the nascent phase of environmental management, since 1992, tribes have received 18 Pollution Prevention Incentives to States (PPIS) grants and 14 Environmental Justice through Pollution Prevention (EJP2) grants. Several tribes have taken steps to integrate pollution prevention into their regulatory and voluntary programs. Critical issue for integration of pollution prevention into tribal activities are the lack of communication among tribes and the need for education and outreach on pollution prevention. Tribes, EPA, and state agencies are hoping to overcome these barriers by increased tribal participation in national conferences and membership in organizations such as the National Pollution Prevention Roundtable.

Guest author Linda Bray Rimer of the North Carolina Department of the Environment points out the challenges that states face in moving pollution prevention beyond “special project” and mainstreaming it into state environmental programs. Mary Gade of the Illinois Environmental Protection Agency emphasizes the importance of incentives, collaboration, and partnerships in using prevention to address remaining environmental problems, and Andrea Farrell of the National Pollution Prevention Roundtable highlights emerging international partnerships for prevention as well.

Chapter Five — Prevention at Educational Institutions: Engaging Future Leaders

Pollution prevention education is available through graduate school. The last six years have seen an explosion of interest in pollution prevention in educational institutions.

In kindergarten through high school, pollution prevention is being added to educational curricula in order to encourage children to practice pollution prevention at school and at home. Educational partnerships and organizations have created materials that engage children’s imagination and enable them to see the practical results of pollution prevention. Examples of these educational programs include the Texas “Learning to Be Water Wise and Energy Efficient,” and the active participation curriculum *Environmental ACTION*.

A number of universities and nonprofit organizations are developing curricular materials incorporating pollution prevention into courses in business, accounting, engineering, chemistry, finance, and environmental sciences. For example, the Management Institute for Environment and Business is working with business schools to encourage an understanding of how source reduction and waste minimization can improve the profitability of a company through environmental accounting, design for the environment, life-cycle analysis, and quality management.

Universities are leading research and development on new pollution prevention concepts, such as life-cycle analysis and industrial ecology. Spurred sometimes by students, some universities have become activists in implementing pollution prevention on campus. For example, The George Washington University in Washington, DC, signed a formal agreement with EPA to incorporate pollution prevention and other environmental concepts into all aspects of university life.

Universities are also a vital source of information for industry and communities. There are at least 35 university-based centers for pollution prevention. These centers work with industry on technology development and information dissemination, data collection, audits, and training and conferences. Many states have established their compliance assistance/pollution prevention coordinators at a regulatory agency with the technical assistance program located at a university. Universities are forming partnerships with federal and state agencies, industry, and local community organizations to solve real world environmental problems on a local, regional, and national scale.

Guest author David Allen of the University of Texas at Austin comments that most prevention activities at universities have been grass-roots, but that their long-term viability depends on making these activities “the rule, not the exception.” Michael Heiman of Dickinson College notes that college prevention programs need not be limited to the campus — students have the opportunity to build bridges between the campus and the wider community through environmental monitoring. Jonathan W. Bulkley of the University of Michigan adds that it is important for colleges and universities to establish links with pace-setting industrial locations where creative prevention activities are underway.

Chapter Six — The Contributions of Communities and Non-Profit Organizations

Community involvement has been crucial in achieving many of the pollution prevention successes discussed in this report. Chapter Six discusses two entities that are influencing pollution prevention at local, national, and global levels: communities and non-profit organizations.

Community-Based Environmental Protection (CBEP) projects focus on local conditions and problems, recognizing that each community is unique and that solutions for one locale are not necessarily applicable to another. CBEP also encourages partner-

ships between public and private entities to address local environmental issues and resources.

While community concerns over industrial pollution are a primary focus for prevention, pollution prevention in the local and regional levels is often interwoven with issues of transportation, land use, and building design/indoor air quality. Several local initiatives are highlighted in this chapter.

Prevention has been a primary impetus for several new professional associations, including the American Institute for Pollution Prevention and the National Association of Physicians for the Environment. Established local government organizations, including the National Association of Counties and the Center for Neighborhood Technologies, have found a new role in helping to advance prevention among their members. Prevention has been the occasion for established environmental groups, such as the Environmental Defense Fund and the Natural Resources Defense Council, to take on new and expanded roles in collaborative projects. Other groups promote prevention by supplying the public with data developed under the TRI.

Guest author Paul Orum of the Working Group on Community Right-to-Know stresses that public access to complete environmental information is key to pollution prevention. Mary Rosso of the Maryland Waste Coalition adds that resources and education are the critical factors that make it possible for communities to implement local prevention programs. In a joint commentary reflecting the views of the National Association of Counties and the National Association of County and City Health Officials, Naomi Friedman and Karen Troccoli discuss the importance of local government involvement in prevention programs, acknowledging that one of the challenges these kinds of initiatives face on a local level is that prevention is a long-term investment, in many cases longer than the political terms of elected officials.

Chapter Seven — Measuring Pollution Prevention

One sign of the success and maturity of pollution prevention activity is that the focus of attention has moved from a concern with program definitions and implementation to program outcomes and results. Our questions now are: Will these approaches provide benefits in line with the costs? Will there be a net improvement to the environment? Chapter Seven provides an overview of both the need for measuring progress in pollution prevention and the need for progress in measuring pollution prevention. The chapter discusses two main ways to approach pollution prevention measures: assessing program effectiveness and determining pollution reductions.

New regulations and policies have contributed to a growing urgency in the need for adequate measures of pollution prevention program effectiveness. As a result of the Government Performance and Results Act, the federal government is under increasing pressure to assess program effectiveness and eliminate federal programs that are not successful. Therefore, a quantitative gauge of the success of pollution prevention programs is critical to the long-term survival of these programs. In addition, the Na-

tional Environmental Performance Partnership System, which allows EPA to grant more regulatory flexibility to states, imparts an increased responsibility on the part of states to demonstrate that they are still meeting environmental goals and objectives. Due to the challenges associated with determining overall statewide pollution prevention progress, many states have focused initially on measuring the success of specific state pollution prevention program components.

States, as well as independent research organizations, are determining the extent to which specific components of state pollution prevention programs are resulting in actual implementation of pollution prevention measures at facilities. Typical measurement methods, which can be used individually or in combination, include: analysis of records, reports, and plans; surveys or in-depth interviews (either broadly covering the universe of relevant facilities, or narrowly focused on recipients of specific services); focus groups; and case studies. This chapter describes studies conducted by New Jersey, Washington, Massachusetts, North Carolina, and Iowa to evaluate the effectiveness of facility planning and/or technical assistance. Studies showed mixed results; some companies implemented pollution prevention recommendations resulting from on-site technical assistance visits, but costs and quality concerns formed significant impediments.

Three methods of measuring pollution reductions are widely discussed: actual quantity change, adjusted quantity change, and materials accounting. These methods rely on data that are readily available to facilities, states, and EPA. The data used to calculate actual quantity change or adjusted quantity change can be obtained from information reported to EPA's Toxics Release Inventory or under RCRA. Some states, such as New Jersey, also require facilities to submit materials accounting data. Other innovative techniques for measuring pollution prevention are also presented in the chapter. For example, under a Pollution Prevention Incentives for States grant, the Indiana Pollution Prevention and Safe Materials Institute devised a pollution prevention measurement that incorporates hazard rankings for chemicals. The increased emphasis on pollution prevention program performance should spur the development of better measurement techniques in the years to come.

Guest authors Ken Geiser and Elizabeth Harriman, writing for the Toxics Use Reduction Institute, provide a cogent argument for the need to measure prevention. While they acknowledge the difficulty of counting something that is prevented (“measuring something that exists, such as pollution, is always easier than measuring that which has been prevented”), Geiser and Harriman stress that “to promote pollution prevention without metrics and without goals for measurement would promote activity instead of movement and reward effort instead of achievement. Constructing valid and appropriate systems for measuring pollution prevention progress is critical to the further development of this young field.”

Chapter Eight — The Future of Pollution Prevention

What does the future hold for pollution prevention? What are likely to be the greatest challenges in the years ahead and are we prepared to meet them? Chapter Eight

highlights some of the issues that will affect the future of pollution prevention. We have invited a variety of views from long-time prevention practitioners.

- Joseph Ling, retired from 3M where he served as Vice President for Environmental Engineering and Pollution Control, outlines his vision for the next step beyond pollution prevention and design for the environment — designing for sustainability. Ling describes where we have been in environmental protection over the past four decades and argues that, while we may not have all the answers, it's time to forge ahead. As he puts it “we need to take that step today [toward sustainability], and not worry about stumbling tomorrow.”
- Warren Muir, president of Hampshire Research Associates, Inc., acknowledges the progress that has been made in recognizing the need for pollution prevention and the increase in pollution prevention activities, but cautions us that pollution prevention is far from a mainstream concept and is neither at the center of environmental regulatory reform nor a top priority for industrial decision makers. Muir finds that pollution prevention “has had no discernible impact on aggregate toxic chemical waste generation” while the number of source reduction activities reported to TRI has declined each year.
- David Thomas, director of the Waste Management and Research Center at the Illinois Department of Natural Resources, notes that there is work still to be done, but affirms that much has been accomplished. He sees pollution prevention as one aspect of a larger environmental revolution that is shaping a new, more sustainable future. Challenges that lie ahead include properly accounting for the true cost of waste and incorporating pollution prevention into the global marketplace. Industry must take a leadership role, colleges need to be training youth to integrate environmental thinking into their disciplines, and new partnerships must be formed between industry and consumers to evaluate environmental problems and design creative solutions.
- Harry Freeman, executive director of the Louisiana Environmental Leadership Pollution Prevention Program at the University of New Orleans, argues that “pollution prevention is a process rather than an end” and suggests that the focus of pollution prevention may shift to clean products rather than industrial processes and wastestreams, and to federal agencies that have not been as involved in the past, such as USDA for non-point source runoff and the Department of Transportation for mobile sources of air pollution.
- Joanna Underwood, president of INFORM, Inc., argues that the concept of pollution prevention has taken center stage in environmental thinking, but the reality is not as bright: industry progress in source reduction “has only been marginal.” Underwood urges business to find innovative answers to source reduction; better data available to the public through materials accounting data; and placing the burden of proof on manufacturers to show that new proposed

chemicals are safe for intended uses. “Exposure prevention” should be one of our new guiding principles.

- Gerald Kotas, co-director of the National Climate Wise Program and senior environmental scientist with the Office of Energy Efficiency and Renewable Energy of the Department of Energy, traces the history of the federal response to pollution and the context for the developing of pollution prevention efforts. He calls for partnerships to be formed to develop creative solutions that will lead to fundamental changes in our lifestyle that are necessary for a sustainable future. Kotas reminds us that at the core of what we are attempting is a deeper understanding of the natural connections between economic productivity, sustainability, and enhancement of environmental quality.

