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U.S. Environmental Protection Agency Fiscal Year 1999 Annual Performance Report



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MESSAGE FROM THE ADMINISTRATOR

March 2000

I am proud to present the Environmental Protection Agency's first Annual Performance Report, a picture of our progress over the past fiscal year. In this report, we highlight our performance results and see how our work contributes to a cleaner environment and safeguards the health of all Americans, especially children, the elderly, and other vulnerable populations. We are committed to building on these results to achieve an even cleaner, healthier environment in the future.

This report covers our contributions in three areas that I believe are particularly important: improving the quality of our environment; employing innovative approaches and partnerships to achieve environmental results; and improving the quality and accessibility of environmental information. Our accomplishments in each of these areas are highlighted in the "Overview" and presented in greater detail in each of the goal chapters that follow.

More than a record of EPA's accomplishments, however, this Annual Performance Report is a vital tool in the Agency's effort to manage its work and resources to achieve real, measurable environmental results. It is the final product in a cycle that began in 1997 when EPA published its Strategic Plan and progressed as we restructured our budget, enabling us to prepare Annual Performance Plans that tie our resources to our goals and hold us accountable for achieving results. This report provides the performance and results information that can help us assess our progress and make sound planning and budgeting decisions for the coming years.

It is clear, however, that we could not have been successful in any of the areas highlighted in the report without the contributions of our State, Tribal, local, and Federal government partners. We share credit for these results with our partners and with the many public and private organizations and individuals who support and contribute to environmental protection efforts.

Today, we have the technology, tools, and capabilities to make advances in environmental and public health protection like never before. We have an opportunity to gather and analyze information, make it fully accessible to the public, and use it to devise innovative strategies that produce results worthy of the American people. Our continued investment in this work will provide for our continued progress toward a safe and healthy world for generations to come.



A handwritten signature in blue ink, reading "Carol M. Browner", is positioned above the printed name.

Carol M. Browner
Administrator

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OVERVIEW

INTRODUCTION

The Annual Performance Report (APR) describes results the Environmental Protection Agency (EPA) achieved relative to the annual performance goals set in its Annual Plan for Fiscal Year (FY) 1999. The APR is the final product in EPA's first full cycle of implementing the Government Performance and Results Act (GPRA), a cycle which began with publication of EPA's Strategic Plan in September 1997 and has continued with the development of Annual Plans each year thereafter. The FY 1999 Annual Plan presented for the first time the new results-based approach that translates the Agency's longer-term strategic goals into annual goals and measures linked to each year's budget. By integrating planning, budgeting, analysis, and accountability, EPA is better placed to obtain more meaningful public health and environmental results for the American people.

EPA'S MISSION AND STRATEGIC GOALS

EPA's mission statement encompasses all of the Agency's legislative authorities and serves as a guidepost for all of its activities. To support its mission, EPA established a strategic planning framework comprising ten strategic goals with associated long-term objectives. Annual performance goals (APGs) identify progress planned each year towards the longer-term commitments.

OVERVIEW OF FY 1999 RESULTS

EPA is proud of its FY 1999 contributions to establishing a cleaner, healthier environment. The results presented in this report demonstrate continued progress and reveal a mix of tools and approaches used to protect public health and promote environmental protection. Throughout the year, the Agency worked closely with its primary partners—States, Tribes, and other Federal agencies—whose involvement contributed significantly to the annual

MISSION

The mission of the U.S. Environmental Protection Agency is to protect human health and to safeguard the natural environment—air, water, and land—upon which life depends.

STRATEGIC GOALS

1. Clean Air
2. Clean and Safe Water
3. Safe Food
4. Preventing Pollution and Reducing Risk in Communities, Homes, Workplaces, and Ecosystems
5. Better Waste Management, Restoration of Contaminated Waste Sites, and Emergency Response
6. Reduction of Global and Cross-Border Environmental Risks
7. Expansion of Americans' Right-to-Know About Their Environment
8. Sound Science, Improved Understanding of Environmental Risk, and Greater Innovation to Address Environmental Problems
9. A Credible Deterrent to Pollution and Greater Compliance with the Law
10. Effective Management

accomplishments discussed in this report and to the progress toward longer-term environmental results.

For FY 1999, EPA can report significant accomplishments that contributed to cleaner air and land and safer food and water, while meeting 44 of the 69 APGs to which the Agency committed in its FY 1999 Annual Plan. For one APG, the performance level achieved was lower than the original

target; however, the overall accomplishment met the intent of the goal. Assessment of achievement of an additional 15 of the goals is affected by delays in reporting cycles, missing data, or targets that fall beyond FY 1999. Owing to a variety of factors, EPA did not achieve nine of the accomplishments it had planned for FY 1999. A table showing detailed results for EPA's 69 APGs is included in Appendix A—Table of Results. Results for these APGs also are highlighted in ***bold, italic*** type in the following chapters, which correspond to the Agency's ten strategic goals.

Many factors influence the Agency's planning processes and the setting of annual targets. Actual performance in FY 1999 against the APGs targeted for the year is an important factor for the Agency's future planning. FY 1999 was the first year for developing and reporting on APGs, and the Agency has put considerable effort into refining its APGs for FYs 2000/2001 to reflect experience to date, improve their quality and measurability, and enhance the precision of annual targets. The Agency's FY 2000 Final Annual Plan, which the Agency expects to issue in March 2000, presents the Agency's final annual performance goals for FY 2000 (against which the Agency will discuss progress in the FY 2000 APR). The Agency will apply lessons learned from performance in FY 2000, where appropriate, to revise the APGs recently proposed for FY 2001.

SELECTED ACCOMPLISHMENTS

Highlights of EPA's FY 1999 accomplishments reflect a range of activities and efforts and fall into three categories: improving the environment by reducing pollution, achieving results through innovative approaches and partnerships, and improving information.

Reducing Pollution for an Improved Environment

Reducing Point Source Pollution: In FY 1999, an additional 3.4 million people (for a cumulative total of 179 million) received the benefits of secondary treatment of wastewater, meeting the Agency's goal.

Through the Clean Water State Revolving Fund (CWSRF) program, Congress continues to provide funds to States for the construction and maintenance of wastewater treatment facilities, which are necessary to reduce point source pollution. Since 1988, the CWSRF has financed 5,200 infrastructure projects across the country, with 859 of those funded in FY 1999. (Goal 2)

A Reduction in Greenhouse Gases: During FY 1999, EPA's government/industry partnership programs contributed to the reduction of annual greenhouse gas emissions by 35 million metric tons in carbon equivalent (MMTCE), adding to the 73 MMTCE already prevented since 1995. The Agency's climate change efforts are designed to overcome barriers to investments in more efficient technologies by consumers and businesses. (Goal 6)

A 25 Percent Reduction in Acid Rain: In the Northeast and Mid-Atlantic Regions of the United States, where ecosystems are most affected by acidification, acid deposition has declined by up to 25 percent under the auspices of the acid rain program, which implements a system of emissions trading known as "cap and trade." This successful market-based approach was established by the Clean Air Act to control emissions of sulfur dioxide (SO₂) from electric power plants that cause acid rain and other environmental and public health problems. In addition, through FY 1999, EPA is on track to maintain four million tons of SO₂ emissions reductions from utility sources. (Goal 1)

Superfund Site Construction Completed: EPA and its partners met the Agency's goal to complete construction at 85 Superfund sites in FY 1999, demonstrating the success of recent major administrative reforms in increasing the efficiency of the Superfund program. Sites where construction has been completed are those where physical construction of all clean-up actions is complete, all immediate threats have been addressed, and long-term threats are under control. In the past seven years, construction has been completed at more than three times the number of sites addressed during the first 12

years of the program. The Agency has progressed from attaining 12 construction completions in 1991 to an annual average of over 74 per year from FY 1993 through FY 1999, for a cumulative total of 670 over the life of the program. More than 90 percent of the sites on the final National Priorities List (NPL) are either undergoing clean-up construction or construction has been completed. Since 1982, the Superfund program has cleaned more than 216 million cubic yards of hazardous soil, solid waste, and sediment and more than 325 billion gallons of hazardous liquid-based waste, contaminated groundwater, and contaminated surface water, while also supplying more than 431,000 people with alternative water supplies. (Goal 5)

Reducing Pollutant Loadings as a Result of Enforcement Actions:

In FY 1999, over 6.8 billion pounds of pollutants were reduced as a result of EPA enforcement actions. Also, about 21 percent of concluded enforcement actions resulted in improvements in the use or handling of pollutants to achieve emission and discharge reductions. Another 47 percent of concluded enforcement actions resulted in improvements in facility management practices and information collection. (Goal 9)

Reducing Emissions through Sector-Based Approaches: In January 1998, EPA joined the metal finishing industry and its stakeholders in launching the National Metal Finishing Strategic Goals Program. Participants, including over 350 companies, 19 States, and 60 local governments, voluntarily pledged to meet ambitious performance goals within five years. In FY 1999, facilities participating in sector-based initiatives achieved environmental results as high as a 93 percent reduction in water use, 77 percent reduction in energy use, 99 percent reduction in organic chemical use, and 73 percent reduction in metal emissions. (Goal 8)

Innovative Approaches and Partnerships to Achieve Environmental Results

Piloting New Approaches: EPA is taking a fresh look at environmental problems and their solutions. The

Agency made strides in devising more efficient and effective regulatory programs, emphasizing cooperative partnerships, and building simpler and more flexible processes for rule-making and permitting.

- Persistent Bioaccumulative Toxic (PBT) chemicals (including mercury, lead, and polychlorinated biphenals) are of particular concern because they retain their toxicity over long periods of time and accumulate in human, animal, and plant tissue, resulting in increased risk of birth defects, neurological disorders, and other diseases. Recognizing the risks posed by these chemicals, EPA has adopted a multimedia strategy to minimize or eliminate the presence of PBTs through a concentrated effort using all available tools. Key FY 1999 accomplishments include the completion of a draft PBT strategy and draft national action plans for 11 of the 12 priority PBT pollutants. The program also initiated ten new partnership projects aimed at achieving voluntary reductions in mercury use and emissions. (Goal 4)
- EPA has been piloting a new approach to broaden public participation in decision-making on the use of older agricultural pesticides. This new approach to reassessment makes the process more transparent to the agricultural community, whose members are most directly affected by Agency findings. EPA exceeded the statutory requirement of evaluating 33 percent of the 9,721 existing pesticide food tolerances by August 1999, completing a cumulative total of 3,430 reassessments (over 35 percent) as of September 30, 1999. (Goal 3)
- One of EPA's boldest innovations, Project XL ("eXcellence and Leadership"), was created through the President's Reinventing Environmental Regulation Initiative. In FY 1999, EPA approved five more regulatory pilot projects through Project XL, bringing the number of pilot experiments in

the implementation stage to 15. An additional 36 XL proposals were either under development or in negotiation, bringing the total number of projects to 51 and meeting the Agency's goal for FY 1999. To date, these pilots have revealed over 40 opportunities for improving environmental regulations, and eight innovations have already been incorporated into EPA regulatory, permitting, and stakeholder involvement approaches. (Goal 8)

Protecting Sensitive Populations and Places: EPA is committed to providing equal environmental protection for all people and communities, spearheading a number of activities to help ensure that no group of people or geographic location bears a disproportionate exposure to pollutants.

- EPA ensures that Agency standards address children's unique vulnerability to health and environmental threats and identifies and assesses environmental health risks that may affect children disproportionately. In FY 1999, the Agency initiated a study to examine children for the effects of two endocrine disrupting chemicals. This study will help to characterize the key factors that influence human exposure to these chemicals and other pesticides, toxics, and metals. It also will help produce a field exposure study protocol to support a follow-up, larger-scale study to begin in FY 2000. The data from these studies will provide more information about where, when, and how children and other sensitive sub-populations are exposed to these kinds of environmental contaminants. (Goals 8, 10)
- In FY 1999, EPA demonstrated its commitment to Brownfields redevelopment by meeting its goal to provide funding and technical support to 80 communities, bringing the total of communities served to 307. The Brownfields Assessment and Development Program supports the assessment,

cleanup, and redevelopment of industrial and commercial properties that have been abandoned or under-utilized because of real or perceived environmental contamination. (Goal 5)

- Environmental justice is the fair treatment and meaningful involvement of all people—regardless of race, color, national origin, or income—in the development, implementation, and enforcement of environmental laws, regulations, and policies. The Agency is actively promoting awareness of environmental justice issues, working with other Federal agencies to implement environmental justice programs and providing communities the tools and data they need to participate actively in environmental decision-making. EPA met its FY 1999 goal of awarding 100 environmental justice grants to eligible community groups, enhancing their ability to address environmental problems. (Goal 7)

Working with State and Tribal Partners: EPA's primary partners in implementing environmental laws are State and Tribal governments. Over the past two decades States have assumed increasingly greater responsibility in implementing the nation's environmental statutes, including direct administration and day-to-day management of many environmental programs. State performance has brought about significant environmental improvement and is fundamental to the achievement of EPA's goals and objectives. EPA also is committed to fulfilling the Federal trust responsibility relative to the health and environmental needs of the 562 Tribal nations, while respecting their right of self-governance. EPA formed a Federal/Tribal partnership in 1984 with the promulgation of an Indian Policy to provide an efficient means of ensuring that EPA's programs protect public health and the environment on Tribal lands.

- In FY 1999, EPA and many States continued to work together through the National

Environmental Performance Partnership System (NEPPS) to determine both State and National public health and environmental protection priorities. Performance Partnership Agreements (PPAs) continued to gain strength as a foundation of the relationship between EPA and State agencies and as a vehicle to facilitate agreements on the priorities necessary for States to implement national environmental programs. PPAs also serve as work plans supporting grant agreements and help distinguish the Federal and State roles and responsibilities. As environmental and human health protection issues continue to grow in size, scope, and complexity, the NEPPS working relationship provides States the flexibility to try integrated, cross-media, and other kinds of innovative approaches. Key to the system is the use of Core Performance Measures (CPMs) to evaluate how well EPA and the States are doing in accomplishing their goals. State reporting to EPA on the CPMs is reflected in assessment of annual performance results discussed in the chapters that follow. In April 1999, EPA and the Environmental Council of the States (ECOS) senior officials endorsed the Core Measures Agreement, which outlines purposes and uses of the CPMs and the conditions for State reporting requirements. Many remaining challenges must be addressed in the years ahead to fully realize the goals articulated in the NEPPS and other agreements between the States and EPA.

- In FY 1999, EPA supported the work of Tribal governments in establishing and addressing public health and environmental priorities on Tribal lands. For example, EPA developed a strategy for installing monitors to obtain data on fine particle emissions in Indian country and deployed 28 monitors in FY 1999. The monitoring network will provide Tribes with new particulate matter

data so they can evaluate the acceptability of their air and identify contributing emission sources. EPA also is helping Tribes to adopt water quality standards and approved a new set of standards for one Tribe in FY 1999. With funding provided in FY 1999, 2,500 homes, within 28 Tribes in Indian country, with inadequate sewage disposal systems were connected to new or upgraded facilities. In addition, over 300 homes using pit privies were placed on septic systems or connected to treatment works for the first time.

Improved Information for Decision-Making and Increased Public Access

Meeting Data Demands: EPA has focused on the quality and availability of data to ensure effective program management and accurate measurement of program results. The Agency is committed to improving and integrating data systems.

- EPA laid the groundwork for a new office dedicated to improving information collection and information access. Formally established in FY 2000, EPA's Office of Environmental Information (OEI) will work closely with external partners to meet their data needs, develop appropriate policies regarding data protection and information security, create and oversee information standards and records management policies, and enhance the security and reliability of EPA's information infrastructure. (Goal 7)
- EPA successfully positioned the Agency's information technology assets for Year 2000 (Y2K) compliance. All 50 EPA mission critical systems were assessed, renovated, and certified through an independent certification program. In addition, the Agency's major computing platforms (mainframe, client/server, supercomputer) and wide-area telecommunications networks were 100 percent compliant, as were the 1,475 non-

mission critical systems and 28 data exchanges, which are a combination of mission critical and non-mission critical systems. (Goal 10)

- For the first time, all 50 States, the District of Columbia, five territories, and numerous Tribes each completed a comprehensive, nationwide assessment of watersheds within their boundaries. The results incorporate water quality data, habitat conditions, endangered species listings, and other environmental factors. Taken together, this information helps all agencies identify the aquatic resources in greatest need of protection and restoration. (Goal 2)

Putting Information into the Hands of the Public: EPA strives to provide information in simple, clear terms and make it readily accessible to State and local governments, the regulated community, and the public.

- EPA, the Environmental Defense Fund, and the Chemical Manufacturers Association achieved considerable success in FY 1999 during the first phase of the Chemical Right-to-Know Initiative, known as the High Production Volume (HPV) Challenge Program. The program focused on 2,800 chemicals produced or imported at volumes greater than one million pounds per year and aimed to identify and make public basic screening-level information on these chemicals, including some that may present particular concerns for children's health. By the end of FY 1999, over 200 companies voluntarily committed to provide screening-level toxicity information on over 1,150 of the chemicals in question. (Goal 4)

BUILDING ON LESSONS LEARNED

As a learning year, FY 1999 provided EPA many opportunities to identify and develop the capabilities essential for results-based management. The

Agency knows that future successes will depend in large measure on its ability to set quantifiable, attainable goals and targets; to forecast external factors that may have an impact on program planning; to measure performance and results more precisely; and to analyze more accurately the relationships among costs, activities, and results.

For a variety of reasons that affected the Agency's ability to accomplish what it had planned, EPA achieved less than full performance for nine of its 69 FY 1999 APGs. (These nine APGs are associated with five of EPA's ten strategic goals.) The Agency does not expect the shortfall in meeting these annual performance targets, however, to compromise its progress toward the long-range goals to which they contribute. For example, the Agency met the statutory and cumulative goal of reassessing existing tolerances for pesticide food uses but missed its annual target due to efforts to strengthen involvement of the agricultural community in the reassessment process. In another case, the Agency added only four States (out of the eight that were planned) to the One Stop Reporting program in FY 1999. However, EPA did develop a technology transfer activity to support States' efforts to increase their level of information integration in order to qualify for the One Stop program. While they may not have resulted in the performance planned for FY 1999, these and other such efforts build a strong foundation for longer-term progress towards the Agency's goals.

In some cases, external factors affected the Agency's ability to achieve planned APGs. For example, due to difficulties reaching agreements with developing nations, EPA delivered 16 international training modules instead of the 30 originally planned. Similarly, the Agency's decision to relinquish interest in the Wilson building, so that the District of Columbia Government could return to its historic home, delayed the consolidation of EPA Headquarters offices at the Washington, DC Federal Triangle.

LOOKING AHEAD

In addition to APGs, other program issues will require careful attention by the Agency and its partners in order to maintain progress towards the achievement of long-term results. The Agency is working to address these challenges, some of which are described below, as it continues to strive for environmental outcomes.

Major Management Issues: EPA's senior leadership takes the major management challenges facing the Agency seriously and works diligently to address the concerns identified by the Agency's internal reviews, the General Accounting Office (GAO), the Office of Management and Budget (OMB), and EPA's Office of the Inspector General (OIG). The Agency made substantial progress on these issues in FY 1999 as discussed in Chapters 2, 5, 7, 8, and 10. Corrective actions are in place for the Agency's remaining management challenges and are being tracked through EPA's Integrity Act program, audit follow-up, and management reports. EPA will continue to address management challenges and program risks and expects to complete corrective actions on several of these challenges during FY 2000.

Air Court Case—Implications for the Future of EPA's Regulations: In May 1999, in a split decision (two to one), a panel of judges on the U.S. Court of Appeals for the DC Circuit held that the Clean Air Act, as applied in setting the new public health air quality standards for ozone and particulate matter, represents an unconstitutional delegation of legislative authority. The court's decision calls into question these important new air quality standards for ozone and particulate matter, which would protect the health of 125 million Americans, including 35 million children. Ozone and particulate matter are harmful pollutants that contribute to acute health effects ranging from asthma and other respiratory problems to premature death. The court's decision stands in the way of EPA's public health protection efforts and carries with it long-term implications not only for these new air quality standards, but also for

many other Federal regulations based on broad grants of authority to Executive Branch agencies. In January, the Administration filed a *certiorari* petition seeking Supreme Court review of key aspects of the court's opinion. (Goal 1)

Non-Point Source Pollution: Non-point source pollution is the nation's largest contributor to water quality problems. There are literally millions of diffuse sources of polluted runoff from agricultural lands, residential areas, city streets, and forests and from pollutants settling out of the air. A key challenge for the future is to foster a national commitment to preventing non-point source pollution, assuring adequate investments by Federal, State, Tribal, and local governments to address this problem. (Goal 2)

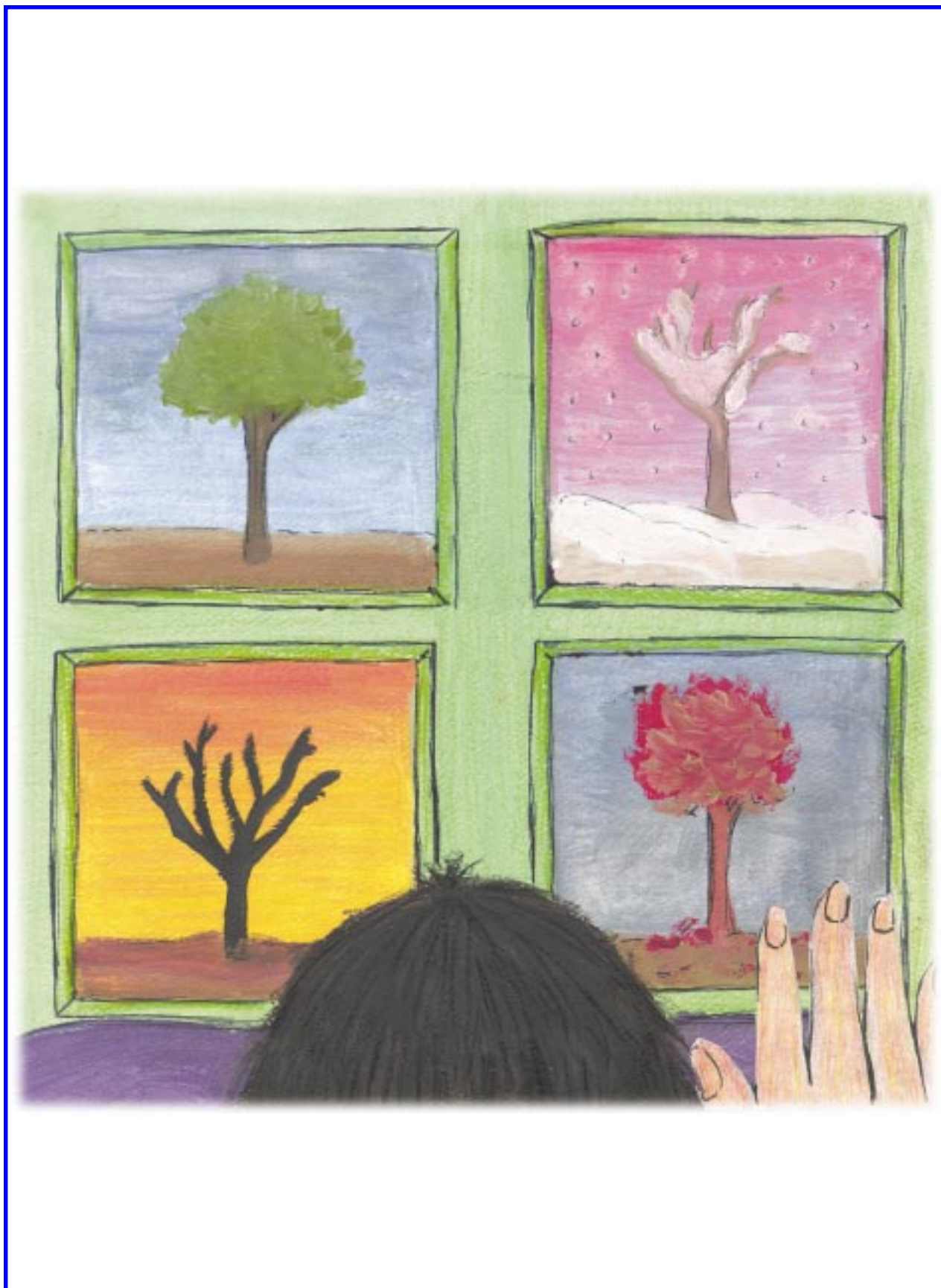
Performance Information—Need for Improved Data Quality and Availability and Better Measures: EPA gathers much of its data on the environment from sources outside the Agency, whose reporting cycles and data standards vary widely. For both its own data and those provided by outside sources, EPA must continue to focus on the quality and availability of the data in order to ensure accurate measurement of program results. In a few instances, data relevant to FY 1999 APGs are either lacking or of poor quality. The Agency is working to determine what data are needed to set better baselines and to assess results over the long term. It is also working with program partners to develop performance measures that focus more on the outcomes of its work in order to supplement measures of programmatic activities.

Need for Improved and More Accessible Information: EPA, in cooperation with States and Tribes, must advance efforts to reinvent environmental information by adopting formal data standards, providing universal access to electronic reporting, and re-engineering the Agency's national data systems. Efforts such as Environmental Monitoring for Public Access and Community Tracking (EMPACT), Environmental Justice grants, and Consumer Confidence Reports on drinking water help provide communities and

individuals with the information and tools they need to address environmental problems. EPA is striving to provide information in simpler, clearer terms and make it more accessible to State, Tribal, and local governments, the regulated community, and the public. (Goal 7)

CONCLUSION

The chapters that follow discuss EPA's FY 1999 progress toward the Agency's goals and objectives. The chapters provide a goal-by-goal discussion, focusing specifically on the Agency's accomplishments against its FY 1999 annual performance goals. The three themes highlighted in the Administrator's message and in this Overview—reducing pollution, innovative approaches and partnerships, and improved environmental information—are evident throughout the chapters. These themes help to characterize the many accomplishments EPA, together with its State, Tribal, and Federal agency partners, achieved during FY 1999 and expects to achieve in FY 2000 and in future years.



GOAL 1: Clean Air

Artwork by Melanie

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GOAL 1: CLEAN AIR

The air in every American community will be safe and healthy to breathe. In particular, children, the elderly, and people with respiratory ailments will be protected from health risks of breathing polluted air. Reducing air pollution will also protect the environment, resulting in many benefits, such as restoring life in damaged ecosystems and reducing health risks to those whose subsistence depends directly on those ecosystems.

OVERVIEW

EPA and its partners have made significant strides to protect public health by dramatically reducing pollution from factories, vehicles, power plants, and many other sources. Almost three

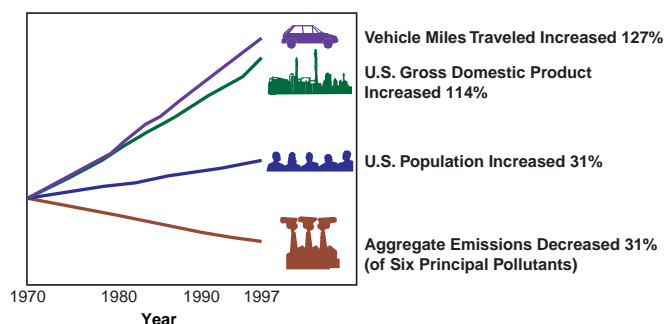
tailpipe standards for cars and diesel engines, and reducing emissions from power plants and other industrial plants.

Significant reductions of hazardous air pollutant emissions (e.g., benzene found in gasoline) also have been achieved. Hazardous air pollutants, known as “air toxics,” are emitted from thousands of stationary and mobile sources and are transported through the atmosphere over regional, national, and global air sheds. EPA encourages the use of innovative approaches to reduce the release of air pollutants. For example, the Clean Air Act established a market-based program to control emissions from electric power plants that cause acid rain and other environmental and public health problems. These emissions can travel hundreds of miles away from the polluting sources, crossing State and national boundaries. The market-based program reduces sulfur and nitrogen emissions from electric utilities through the use of economic incentives. This gives utilities the flexibility and incentive to reduce emissions at a lower cost while still ensuring that overall emission reductions are achieved.

Despite this progress, air pollution problems remain. Though air quality trends have improved nationally, there are still both urban and rural areas with concentrations above the level of EPA’s health-based national standards. Ozone, for example, remains a persistent problem. EPA and its State, Tribal, and local partners should continue to ensure steady improvements in air quality.

EPA established four objectives in its Strategic Plan to guide its work toward this goal: attain NAAQS for ozone and particulate matter; reduce

Comparison of Growth Areas and Emissions Trends

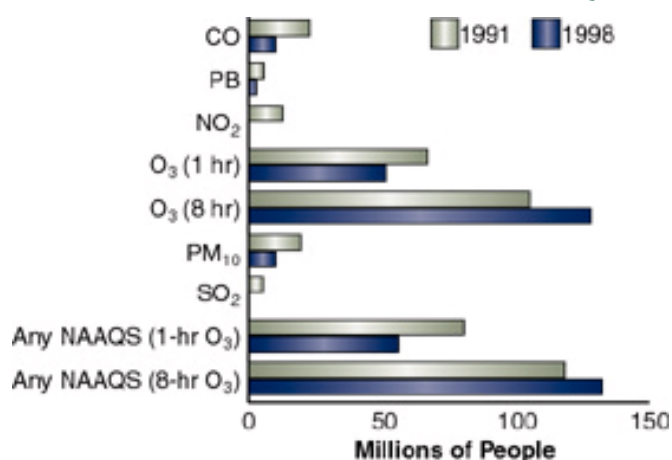


decades of air pollution control have significantly improved air quality. These improvements occurred during times of population growth and while the number of vehicle miles traveled also were increasing.

Under the Clean Air Act, EPA has developed health-based National Ambient Air Quality Standards (NAAQS) for six common air pollutants: carbon monoxide (CO), lead (Pb), nitrogen dioxide (NO₂), ozone (O₃), particulate matter (PM), and sulfur dioxide (SO₂). Nationally, the 1997 average air quality levels were the best on record for all six pollutants, and the 1998 levels were as good or better for all pollutants except ozone.

Many air quality improvements stem from pollution control efforts undertaken by State, local, and Tribal entities as well as industry actions. Efforts include reducing sulfur in fuels, tightening

Population in Counties with Pollution Levels Above the NAAQS



emissions of air toxics; attain NAAQS for CO, SO₂, and lead; and reduce sulfur and nitrate deposition caused by acid rain.

FY 1999 PERFORMANCE

Attain NAAQS for Ozone and PM

By 2010, EPA is committed to improving air quality for Americans living in areas that do not meet the National Ambient Air Quality Standards (NAAQS) for ozone and particulate matter.

Ozone

More people live in counties with unhealthful levels of ground-level ozone than any other air pollutant. Ozone (urban smog) can impair lungs, cause chest pain and shortness of breath, and aggravate asthma, bronchitis, and emphysema. EPA's long-term objective for ozone is that by 2010, the air will be safer to breathe for 122 million Americans living in counties expected to have monitored air above the 8-hour standards in 1999.

In July 1997, EPA published revised, more protective NAAQS for ozone and PM. On May 14, 1999, the U.S. Court of Appeals for the District of Columbia Circuit issued an opinion restricting EPA's ability to implement the new regulations. The court found that a Clean Air Act standard, as interpreted by EPA in setting these standards, represented an unconstitutional delegation of legislative authority to the executive branch, but the court did not question the science or the process conducted by EPA in revising the NAAQS. While the Agency plans to take no actions that might be construed as inconsis-

tent with the court's opinion, it continues to believe the new standards are necessary to protect public health. In late January, the Administration sought Supreme Court review of this decision.

The court decision did not affect the validity of the existing pre-1997 standards. To ensure that public health is protected, EPA has proposed to reinstate the 1-hour ozone standard in the nearly 3,000 counties where it had been revoked. Reinstatement of the 1-hour standard would ensure that air quality in areas that had met the 1-hour standard does not backslide while the litigation is being resolved.

EPA established performance goals for FY 1999 before the May court decision. *Although the Agency exceeded its goal of revoking the 1-hour standard for eight areas with the non-attainment designation, judicial decisions have since caused the Agency to revisit the goal (APG 1).* As a result of the court case, EPA is now working to reinstate the 1-hour standards.

Particulate Matter (PM)

PM is the general term for a mixture of solid particles and liquid droplets found in the air. These particles originate from many stationary and mobile sources. Studies have shown a link between PM exposures and potentially shortened life span as well as respiratory disease and other conditions. Sensitive groups that appear to be at greatest risk for the health effects include the elderly, children, and people with asthma. PM emissions also contribute to regional haze that impairs visibility in national parks and wilderness areas. An example of an ongoing project to improve visibility and reduce haze is shown in the sidebar on the following page.

EPA has been working with States and Tribes to develop and install monitoring networks to obtain data on fine particle emissions. *As of the end of the fiscal year, the States deployed PM_{2.5} ambient monitors at 1,110 sites, effectively meeting the purpose of the goal. The goal in the Annual Plan was 1,500 monitors; however, 1,110 monitors were deployed based on the results of a Congressionally mandated study done by the National Academy of Science (NAS) (APG 2).* PM_{2.5} "fine" are particles less than 2.5 micrometers in diameter. EPA also developed a strategy for deploying PM_{2.5} monitors in

IMPROVING AIR QUALITY IN THE MT. ZIRKEL WILDERNESS AREA



Throughout the past decade, SO₂ emissions from coal-fired power plants in Colorado have affected visibility and contributed to high levels of acid precipitation in the Mt. Zirkel Wilderness Area. EPA, the U.S. Forest Service, the State of Colorado, the Sierra Club, and nearby utility companies are working to control emissions. This partnership has resulted in a negotiated settlement with the previously uncontrolled Hayden plant to build and operate new pollution control equipment. As a result, new controls will reduce annual sulfur dioxide emissions by 14,000 tons (nearly 85 percent) and oxides of nitrogen emissions by 5,000 tons (over 40 percent) by the end of 2000.

Indian country and in FY 1999 deployed 28 monitors on Tribal lands. The deployment of this monitoring network is a crucial first step toward healthier air for millions of people. The network will provide States and Tribes with new PM data so they can evaluate the acceptability of their air, identify emission sources, make non-attainment designations, and develop strategies and plans for attaining the new standard consistent with the ultimate outcome of the court case and any subsequent review of the standard. The May 14, 1999 court decision on the NAAQS did not affect the authority or need for establishment and operation of the PM_{2.5} monitoring network. In addition, monitoring data will inform future reviews of the particulate matter air quality standard.

Research Contributions

Ground-level ozone is the most complex, difficult to control, and pervasive of the six air pollutants for which EPA sets NAAQS. Under certain conditions, emissions of ozone-precursors can travel hundreds of miles from their origin and result in high ozone concentrations over large regions. The Agency's research is providing and

refining models for predicting the impact of downwind ozone concentrations. An important focus of the Agency's FY 1999 research was establishing the reliability of the Models-3/Community Multiscale Air Quality-Version 3 model for ozone NAAQS attainment planning through operational and diagnostic evaluation against field data. This model is the Agency's standard for projecting the requirements and benefits of alternative ozone control options and underlies Tribal, State, and local agency efforts to attain the ozone standard.

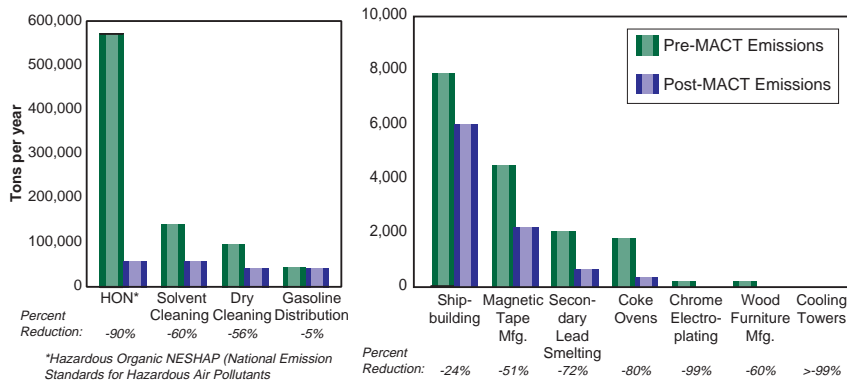
The Agency's particulate matter research program is closely aligned with high priority PM research issues recommended by the National Research Council. *In FY 1999, EPA identified and evaluated two plausible biological mechanisms by which PM causes death and disease in humans (APG 3).* The biological mechanisms identified and evaluated are the attributes (e.g., particle size and composition) of PM that underlie its toxicity and characteristics common to "PM susceptible" subpopulations (e.g., the elderly with cardiopulmonary disease). As part of its efforts in achieving this goal, EPA completed reports on PM-induced toxicity, PM dosimetry, and PM characteristics associated with biological responses. In addition to the numerous publications that have resulted from the research efforts thus far, EPA also sponsored a PM colloquium attended by 350 scientists from 12 countries. The meeting communicated the state of the science and identified the additional research needed to improve EPA's understanding of PM and increase its ability to reduce PM health risks.

Reducing Emissions of Air Toxics

By 2010, EPA is committed to reducing air toxics emissions by 75 percent from 1993 levels to significantly reduce the risk to Americans of cancer and other serious adverse health effects caused by airborne toxics.

Available data from U.S. cities indicate that air toxics may increase an individual's lifetime cancer risk by one in 10,000. People who live near certain major industrial plants may face even higher cancer risks. To address these sources, EPA develops and ensures implementation of technology-based standards for major stationary sources of toxic pollutants.

Reductions in Air Toxics Emissions from Implementation of MACT Standards



The Agency, in partnership with State, Tribal, and local agencies, is on track to meet its goal of reducing air toxic emissions. FY 1999 data indicate a 14 percent reduction in air toxic emissions, resulting in a cumulative reduction of 27 percent from 1993 levels (APG 4). EPA calculates the percentage reductions annually using the National Toxics Inventory (NTI), which is updated every three years. The 1999 NTI will be published in 2002. EPA's Regional offices reviewed emission inventories from 18 States and State air quality data from 100 monitoring sites to assure quality and consistency. Concurrently, States conducted 25 emission inventories and collected ambient data from 157 monitoring sites. To date, EPA has developed and issued 46 technology-based standards to protect human health and the environment by cutting large quantities of toxic emissions released into the air.

The technology-based regulation of air toxics already has brought significant reductions (see graphs above). From 1992 to 1997, EPA promulgated Maximum Achievable Control Technology (MACT) standards for 92 source categories, eliminating one million tons of air toxics and 1.5 million tons of smog-causing Volatile Organic Compounds (VOCs) per year. In the preceding 20 years, only seven such standards, eliminating 125,000 tons of toxics, were in place. In FY 1999, EPA promulgated 16 MACT standards for 26 source categories.

Air pollution from mobile sources, such as cars and trucks, accounts for close to one-third of the nationwide emissions of air toxics. EPA is working to reduce toxic air emissions from mobile sources. Since 1995, EPA has been working with States to

implement a two-phase reformulated gasoline (RFG) program to improve air quality. Phase I of the RFG program made great progress. Between 1995 and 1999, it cut emissions of toxic pollutants 17 percent, compared to conventional gasoline, in communities where 75 million people live and work. Phase II, which began January 1, 2000, takes another step toward cleaner air. It will reduce smog-forming pollutants 27 percent more than conventional gasoline.

Research Contributions

Air toxics research provides the knowledge necessary to quantify emissions, identify key pollutants, and develop strategies for cost-effective risk management. *In FY 1999, the research program completed health assessments for four high-priority air toxics, one short of the five assessments that were planned (APG 5).* Dose-response assessments for dichloropropene and cadmium will allow the urban air toxics program to evaluate potential risks from these chemicals. Assessments for ethylene glycol monobutyl ether and acetonitrile will assist in estimating residual risk and in determining whether to rescind a chemical's toxic designation. The fifth assessment, for vinyl chloride, was delayed and will be completed in FY 2000. This delay will not impact achievement of the 2010 strategic objective.

Attain NAAQS for CO, SO₂, and Lead

By 2005, EPA is committed to improve air quality for Americans living in areas that do not meet NAAQS for CO, SO₂, and lead. (All areas currently meet the standard for nitrogen oxide—NO_x.)

These pollutants pose high risks to both public health and the environment. They can affect breathing, cause respiratory illness, and aggravate existing cardiovascular disease. Exposure to lead can cause kidney disease and reproductive and neurological disorders. EPA has successfully reduced these air pollutant emissions while working toward the goal of having all areas in attainment by 2005. EPA will continue to work with areas to develop emission reduction strategies to clean the air of these pollut-

ants and to prevent areas with clean air from deteriorating.

Areas are redesignated when they are determined to meet EPA's standard for clean air. ***In FY 1999, 13 additional areas were redesignated as attainment areas, having met the EPA standard for CO, SO₂, or lead, thus reducing the total from 158 to 74 non-attainment areas (APG 6).*** While working with areas to maintain clean air, EPA will continue to bring non-attainment areas into attainment through mobile source program implementation, including wintertime oxygenated fuels programs and inspection and maintenance programs for automobiles.

EPA estimates that mobile sources emit 77 percent of the national CO emissions and a larger share in urban areas. While only a handful of non-attainment areas remain, EPA and the States will rely on continued or strengthened reductions from mobile sources to complete the task of attaining the ambient standard by 2005 and to offset expected longer-term population and economic growth.

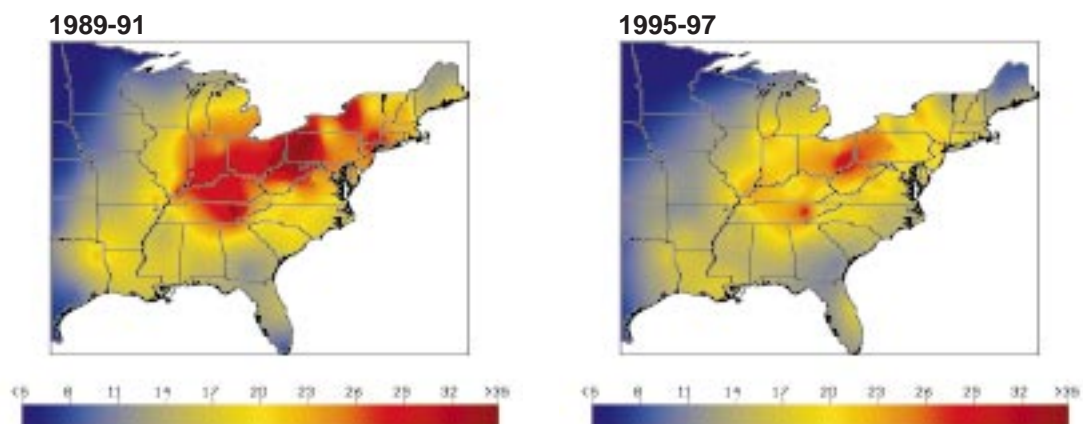
Reduce Sulfur and Nitrate Deposition That Causes Acid Rain

By 2010, EPA's objective is that ambient sulfates and total sulfur deposition will be reduced by 20-40 percent from 1980 levels due to reduced sulfur dioxide emissions from utilities and industrial sources. By 2000, ambient nitrates and total nitrogen deposition will be reduced by 5-10 percent from 1980 levels due to reduced emissions of nitrogen oxides from utilities and mobile sources.

Emissions of SO₂ and NO_x react in the atmosphere and fall to earth as acid rain, causing acidification of lakes and streams and contributing to tree damage at high elevations. NO_x emissions are also a major precursor of ozone. SO₂ and NO_x gases form fine particles that ultimately affect public health by contributing to premature mortality, chronic bronchitis, and other respiratory problems. The fine particles also contribute to reduced visibility in national parks and elsewhere. Additionally, NO_x deposition contributes to the depletion of oxygen in coastal waters, damaging native aquatic life. The maps below represent wet sulfate deposition over time. As illustrated in the 1995-1997 map, following the 1995 implementation of the Acid Rain Program, total sulfur deposition fell in a dramatic and unprecedented reduction of up to 25 percent over a large area of the eastern United States.

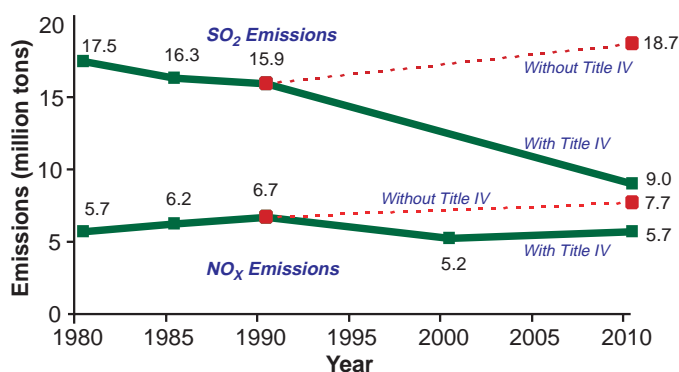
Emissions data are not available until 12 months after the end of the calendar year. Therefore, 1999 data will not be available until late 2000. SO₂ emissions from utility sources were 13.1 million tons in 1997 compared to 17.5 million tons in 1980, representing a decrease of 4.4 million tons. NO_x emissions from coal-fired utility sources were 5.6 million tons in 1997 compared to 6.1 million tons that would have been emitted in the absence of the Clean Air Act Amendments of 1990. ***EPA is on track to meet its goal to maintain four million tons of SO₂ emissions reductions from utility sources and maintain 300,000 tons of NO_x reductions from coal-fired utility sources (APG 7).***

Changes in Sulfate Deposition in the Eastern U.S. Pre- and Post-1990 CAA Amendments



The graph below illustrates the long-term goal of emissions reductions under the Title IV trading program of the Clean Air Act. During Phase I of the program, SO₂ emissions initially dropped by nearly 25 percent below the mandated emission ceiling because affected utility sources reduced emissions to save allowances for use under the more stringent Phase II of the program, which begins in 2000 and has stricter reduction rules. These banked allowances will be gradually used up until the mandated emission ceiling is reached in 2010.

Reductions in SO₂ and NO_x Emissions from Utility Sources Following CAA Title IV Implementation



NO_x emissions are projected to be 5.7 million tons in 2010, or two million tons below levels that would have been attained without implementation of Title IV. Unlike the SO₂ program, NO_x emissions are not capped; rather, affected sources are required to adhere to an emissions rate. Without a cap, NO_x emissions would be expected to rise in the future as demand for electrical use increases.

The emissions trading program has proven to be an extremely cost-effective mechanism, facilitating 100 percent compliance by affected sources and stimulating early emissions reductions. In the Northeast and Mid-Atlantic Regions of the United States, where ecosystems are most sensitive to acidic deposition, sulfate levels in precipitation have declined by up to 25 percent. Initial findings on nitrate concentrations, however, showed little decrease because overall NO_x emissions have remained fairly constant due to offsetting increases in emissions from non-utility sources.

PROGRAM EVALUATION

Reformulated Gasoline (RFG) Evaluation

In December 1998, in response to growing concern about MTBE (Methyl Tertiary Butyl Ether) in drinking water, EPA's Administrator appointed a panel to examine benefits and concerns related to RFG (MTBE and other oxygenates). The examination also included identifying data gaps and evaluating alternatives to the status quo based on their effects on air quality, water quality, and stability of fuel supply and cost. The report can be found at <http://www.epa.gov/oms/consumer/fuels/mtbe/mtbe.htm>. Based on its evaluation of the RFG program, the panel found the following:

- RFG has provided substantial reductions in the emissions of a number of air pollutants from motor vehicles, in most cases resulting in emissions exceeding those required by law.
- Detectable amounts of MTBE occur in approximately five to ten percent of drinking water supplies in RFG areas. To date the great majority of these detections have been below levels of public health concern but at levels that have raised consumer taste and odor concerns.
- The major source of groundwater contamination appears to be releases from underground gasoline storage systems. Other sources of water contamination include small and large gasoline spills to ground and surface waters and the release of unburned fuel from recreational water craft, particularly those with older motors.

To address these issues, the panel recommended the following actions:

- Improve the nation's water protection programs, by implementing over 20 specific actions to enhance Underground Storage Tank, Safe Drinking Water, and private well protection programs.
- Reduce the use of MTBE substantially and request that Congress provide clear Federal and State authority to regulate and/or eliminate the use of MTBE and other gasoline additives that threaten drinking water supplies.

- Ensure that there is no loss of current air quality benefits.

Emissions Trading and Other Market-Based Regulatory Tools

A comprehensive evaluation, “New Tools for Improving Government Regulation: An Assessment of Emissions Trading and Other Market-Based Regulatory Tools,” indicates that pollution trading can reduce the compliance costs of regulated industries, provide more flexibility to meet emission goals, help generate public support for new regulatory programs, and serve as the basis for fashioning compromises acceptable to a wide range of interests. The evaluation further indicated that trading is not suitable for use in every regulatory program, with the challenge being to determine when it should be used and how to design and implement trading in ways that ensure environmental protection and economic efficiency goals are achieved. The evaluation also identified those aspects of the acid rain program that contributed to its success. The report, issued in October 1999, is available at <http://www.endowment.pwcglobal.com/pdfs/BrynerReport.pdf>.

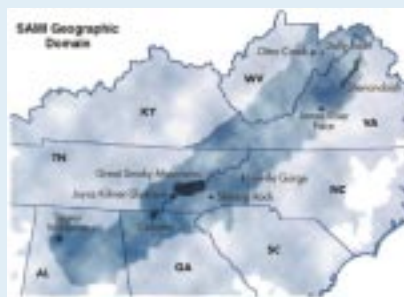
Particulate Matter (PM) Monitors

The General Accounting Office (GAO) report, “EPA’s Actions to Resolve Concerns With the Fine Particulate Monitoring Program,” was released on August 27 1999, and is available at the GAO website: <http://www.gao.gov/daybook/990827.htm>. The report focuses on two main areas of the PM monitoring program: EPA’s response to a report by the National Academy of Sciences from March 31, 1998 and issues encountered by State and local agencies in implementing the program. GAO’s conclusions emphasize the need for more complete field testing of the speciation samplers prior to deployment. The speciation samplers would help provide a picture of which sources are contributing which components to ambient air and would help identify the sources of secondarily formed particles. The information will be crucial for States to be able to develop control strategies that target the least-costly control measures.

SOUTHERN APPALACHIAN MOUNTAINS INITIATIVE

In the southeastern States, the economy is thriving, and the population is growing. There is an increased demand for transportation, energy, and manufactured products. Emissions from industries, power plants, and vehicles contribute to the decline in air quality in the Southern Appalachians. Because air pollutants travel across State boundaries, effective air quality management requires a regional approach. The voluntary effort called the Southern Appalachian Mountains Initiative (SAMI) identifies and recommends emissions management strategies to remedy existing and prevent future adverse air quality effects in Southern Appalachia.

SAMI is conducting an integrated assessment to link emissions, atmospheric transport, exposures, and effects of ozone, acid deposition, and fine particles. SAMI’s air quality and other computer models track air emissions from their sources across the eastern United States, simulate the complex chemical and physical processes that occur in the atmosphere, project air pollutant exposures across the SAMI region, and estimate the environmental and socioeconomic impacts of these air pollutant exposures. The assessment is considering the impacts of current air regulatory requirements and alternative emissions management strategies for the years 2010 and 2040. Results will be summarized in a final report that will be used to develop SAMI’s recommendations about emissions management strategies for consideration by policy makers.



SAMI participants are: Alabama, Georgia, Kentucky, North Carolina, South Carolina, Tennessee, Virginia, West Virginia, EPA, National Park Service, U.S. Forest Service, industries, environmental organizations, academics, and interested members of the public.

CONCLUSIONS AND CHALLENGES

EPA and its partners have achieved many of the most cost-effective pollution reductions and now plan to address the last, most difficult increment in emission reductions in order to achieve the nation's clean air goals. EPA's strategy, consistent with Agency-wide reinvention efforts, is to set aggressive goals and use flexible strategies while emphasizing accountability. Within this overall framework, the Agency would like to achieve the following:

- EPA's challenge is to minimize the burden on the regulated community while maximizing pollution reduction across all titles of the Clean Air Act. For example, many air toxics benefits achieved through VOC reductions are associated with ozone reduction efforts. The sidebar on the previous page illustrates a model program that successfully combines multi-pollutant, multi-State emissions management strategies to remedy existing and prevent future adverse air quality effects in Southern Appalachia.
- The Agency needs to ensure that research addresses those areas most likely to pose risks to public health and the environment. For example, EPA has developed a multi-pollutant air research program to explore the combined influence of criteria air pollutants and air toxics.
- The Agency will continue working with Tribal governments to develop their capacity for implementing the Clean Air Act.

In summary, EPA has made significant progress toward achieving its long-term goal of cleaner air for all Americans. During FY 1999, EPA proposed the next generation of cleaner burning engines and cleaner burning fuels, which will strengthen tailpipe standards for cars and other vehicles and also will reduce sulfur in gasoline. Significant reductions in air toxics emissions were achieved through the implementation of technology-based standards. States and Tribes completed a massive effort to build a nationwide monitoring network for characterizing PM. In addition, substantial reductions in SO₂ and NO_x from utility sources are lowering acid

rain levels in the Northeast and Mid-Atlantic Regions.

It is important, however, not to lose sight of air pollution problems that still remain. For example, although the country has made substantial progress toward reducing concentrations of ozone and PM, many areas continue to experience unhealthy levels of those as well as other pollutants. EPA will continue working with its partners to ensure that every American has clean air.

KEY MILESTONES FOR THE FUTURE

- EPA needs to coordinate the technical and scheduling requirements for the regional haze and PM_{2.5} programs to address environmental problems that are the products of the same pollutants and precursors. Because many of the controls needed to achieve the NAAQS for PM_{2.5} also may be needed to meet reasonable progress targets for regional haze, the Agency called for the development of strategies on a schedule that would maximize States' opportunities to establish a single set of requirements to address both programs.
- The development of credible inventories, models, and monitoring data are critical as EPA begins to address residual risk assessments and implement the urban toxic strategy.
- EPA needs to employ innovative partnerships to address risk from all air pollutants.



GOAL 2: Clean and Safe Water

Artwork by Krystelle

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GOAL 2: CLEAN AND SAFE WATER

All Americans will have drinking water that is clean and safe to drink. Effective protection of America's rivers, lakes, wetlands, aquifers, and coastal and ocean waters will sustain fish, plants, and wildlife, as well as recreational, subsistence, and economic activities. Watersheds and their aquatic ecosystems will be restored and protected to improve human health, enhance water quality, reduce flooding, and provide habitat for wildlife.

OVERVIEW

EPA strives to ensure that all Americans have access to water that is safe for drinking, fishing, and swimming and that all fresh and saltwater resources support healthy populations of fish and wildlife.

Safe drinking water is the first line of defense in protecting human health. The American public enjoys some of the safest drinking water in the world, yet illnesses due to contamination continue to occur. For example, in 1993, an outbreak of the contaminant *Cryptosporidium* in Milwaukee's drinking water supply caused over 400,000 illnesses and more than 100 deaths. More recently, in September 1999, two people died and more than 700 became ill after drinking water tainted by *E. coli* at an upstate New York county fair. Overall, in 1999, nine percent of Americans served by community water systems, or approximately 38 million people, received water that violated health standards at least once during the year.

Clean water and healthy aquatic ecosystems support all life, are vital to many sectors of the U.S. economy, and play an important role in Native American culture. U.S. manufacturers and the agricultural industry use vast quantities of clean water every year to manufacture products, irrigate crops, and raise animals. The nation's tourist industry relies heavily on ocean and fresh-water destinations. Native American cultures place great importance on clean water and invoke the spirit of water in cultural ceremonies for medicinal and purification purposes.

In its Strategic Plan, EPA established three objectives to guide its work to provide clean and safe water over the next five years: protect human health by ensuring safe drinking water and protection from contaminated fish and recreational waters; conserve

and enhance the ecological health of waterbodies; and reduce the impact of pollutants entering the nation's waters.

FY 1999 PERFORMANCE

Safe Drinking Water, Reduced Exposure to Contaminated Fish, and Healthy Recreational Waters

EPA, working with its partners, protects the public from exposure to contaminated water by addressing the three primary paths of exposure: drinking, eating fish and shellfish, and recreational contact. By 2005, EPA's objective is to protect human health so that 95 percent of people served by community water systems will receive water that meets the 1994 health-based drinking water standards, consumption of contaminated fish and shellfish will be reduced, and exposure to microbials (pathogenic viruses, bacteria, and parasites) and other forms of contamination in waters used for recreation will be reduced.

Improving Drinking Water Quality

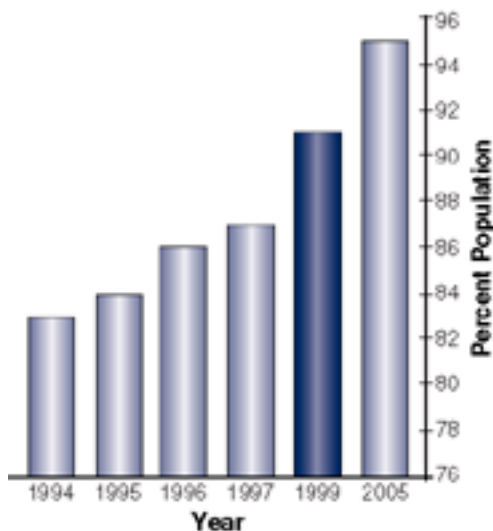
To ensure the delivery of safe drinking water, EPA works in partnership with the States, Tribes, and other interested parties to design and implement strong protective standards. *In FY 1999, EPA met its goal of promulgating two new health-based regulations. One addresses disinfection byproducts (DBPs—potentially harmful contaminants formed by the reaction of disinfectants, such as chlorine, with naturally occurring organic matter in water); the other addresses microbials (APG 8).* The DBP rule provides increased protection for as many as 140 million people. The microbial rule establishes controls for *Cryptosporidium* and other waterborne pathogens. The Agency estimates that this rule will reduce the number of cryptosporidiosis cases by between 110,000 and 463,000 per year.

PARTNERSHIP FOR SAFE WATER

The Partnership for Safe Water is a voluntary effort of the nation's drinking water utilities and their representative organizations, States, and EPA. The goal is to provide an additional measure of safety to millions of Americans by implementing prevention programs beyond regulatory requirements. The Partnership gives members specific tools they can use immediately to examine their operations and identify ways to improve performance. Plants that completed the self-assessment phase of the Partnership showed a 30 percent reduction in finished water turbidity levels. (Under normal conditions turbidity is an indicator of the effectiveness of filtration for pathogen removal). As of April 1999, membership includes 225 surface water utilities representing 330 water treatment plants, serving over 90 million people.

EPA provided critical technical assistance for implementation of the Drinking Water State Revolving Fund (DWSRF). As of September 30, 1999, States entered into 792 assistance agreements with community and non-community drinking water systems. This program has contributed to greater compliance with health-based standards through improvements to pipes, treatment plants, and other components of drinking water infrastructure.

Population Served by Community Water Systems Meeting Drinking Water Standards



In FY 1999, 91 percent of the population served by community water systems received drinking water meeting all health-based standards, up from 83 percent in 1994, achieving FY 1999 targets (APG 9).

To provide a safer drinking water supply and reduce the costs of treating drinking water, EPA works with the States and Tribes to protect sources of drinking water. As a key component of the multi-agency Clean Water Action Plan (CWAP), EPA works with States, Tribes, other Federal agencies, and local communities to conduct source water assessments and implement source water protection programs. In FY 1999, 51 States/territories submitted source water assessment plans, 10 of which were approved, and the remaining 41 were in the review process and expected to be approved in FY 2000. ***In addition, 11,011 community water systems (CWS) are implementing programs to protect their source water (exceeding the FY 1999 target by 6,611). Combined, these community water systems serve a population of almost 49 million people (APG 10).***

The wellhead protection program includes five steps as follows:

- Form a team.
- Delineate areas around the wellhead to be wellhead protection areas (WHPA).
- Take an inventory of actual or potential sources of contamination in or near the WHPA.
- Institute preventative/protective measures to manage WHPAs and ensure the groundwater resources will not be contaminated.
- Develop and implement contingency plans should the groundwater resources that serve as drinking water supplies inadvertently become contaminated.

In FY 1999, community water systems' efforts in implementing programs to protect their source water resources included not only steps four and/or five of the wellhead protection program, but also the completion of steps one through three that provide the basis for implementation activities. This resulted in a larger number of systems being counted than originally forecast. In FY 2000, CWS' efforts will be expanded to include both surface water and groundwater sources of drinking water supplies.

Reducing Exposure to Contaminated Fish

States and Tribes take primary responsibility for informing the public about risks of fish consumption. Approximately seven percent of river miles and 16 percent of lake acres have been assessed and found to have fish that should not be eaten or eaten in only limited quantities. To communicate this information to the public, EPA has improved its National Listing of Fish and Wildlife Advisories Internet site (<http://www.epa.gov/ost/fish>). States and Tribes can enter advisories directly on this site, allowing easy public access to timely information. In addition, EPA has distributed fact sheets to State and Tribal fish advisory programs that explain how to use technical information to develop fish consumption advisories. To help ensure consistency across the country, EPA has worked with government and private parties to establish a common standard for decision-making about fish consumption advisories. Currently, 25 States follow EPA's guidance for monitoring and evaluating fish.

As part of its efforts to better understand the contaminated fish problem, the Agency began a nationwide survey to learn about the presence of persistent bioaccumulative toxics (PBTs—pollutants that when eaten stay in fat and organs, passing along the food chain) in fish tissue. EPA also developed a draft water quality criterion for methyl mercury, a major contaminant of fish in lakes and rivers and a health risk to people, particularly children and pregnant women.

Getting to Healthy Recreational Waters

In FY 1999, EPA continued its efforts to make nationwide beach safety information available. The Agency gathered and provided to the public information from 26 States on the quality of beaches and how States assess and inform the public about them. EPA has major efforts underway to address wet weather discharges (sewage overflows and runoff from streets), a major cause of beach closures.

Research Contributions

EPA's drinking water research program provides the scientific and technical basis for improving drinking water quality and supporting the Agency's

BEACH ADVISORIES PROTECT HUNTINGTON BEACH BATHERS

EPA's Beach Protection Program focuses on assuring that the public is notified of risks at bathing beaches. In the summer of 1999, a major water safety effort contributed to developing an advisory for Huntington Beach for much of the summer. In keeping with EPA's Right-to-Know Initiative, Orange County provided critical information to the Southern California beach-going public. The county is leading an intensive effort to identify and reduce the sources of contamination and is committed to taking appropriate actions to return this recreational resource to unrestricted public use.

rulemaking activities under the Safe Drinking Water Act Amendments. *In FY 1999, EPA met its goal of developing dose-response information on disinfectant byproducts, waterborne pathogens, and arsenic for characterizing potential exposure risks from consuming drinking water (APG 11).* The results of this work include data on the first urban study on microbial gastrointestinal disease, as well as hazard identification and screening studies on the reproductive and developmental effects of selected DBPs. This research provides important information on possible community risks and on methodologies for future studies. With this information, the Agency develops critical health data on priority drinking water contaminants to better understand the nature and magnitude of the risks posed by these agents, leading to the development of more scientifically sound regulations.

Conserve and Enhance the Nation's Waters

Improving the overall health of the nation's waters is a core objective of each of EPA's water programs. By 2005, EPA, working closely with its partners, especially States and Tribes, has committed to conserve and enhance the ecological health of the nation's waters and aquatic ecosystems—rivers and streams, lakes, wetlands, estuaries, coastal areas, oceans, and groundwater—so that 75 percent of waters will support healthy aquatic communities. Currently, 500 of the nation's 2,150 watersheds have

more than 80 percent of the assessed waters meeting water quality standards, an increase from 486 watersheds in 1996.

Strengthening Water Quality Standards

State and Tribal Water Quality Standards represent water quality goals for each water body and establish the regulatory groundwork for water quality-based controls (like National Pollutant Discharge Elimination System, or NPDES, permits) necessary to protect public and ecological health. EPA is responsible for approving the standards when submitted by a State or Tribe. In addition, EPA helps these entities strengthen existing standards and incorporate advancements in risk assessment and bio-accumulation analysis into water quality criteria. In FY 1999, the Agency issued guidance to assist States and Tribes in assessing the biological health of their lakes and reservoirs and recommended new criteria that States and Tribes can incorporate into existing standards to control disease-causing microorganisms. EPA is helping Tribes to adopt water quality standards for waters on Tribal lands. In FY 1999, EPA approved new water quality standards for one Tribe and standards revisions in 17 States. The Agency also helped 17 States take corrective actions to address deficiencies in their standards, and initiated rules to establish replacement Federal standards for three States.

Achieving Water Quality Standards

States and Tribes are primarily responsible for assessing and prioritizing problem waters and for devising and implementing strategies to achieve standards. As part of the Clean Water Action Plan (CWAP), *56 States and Territories (six more than the FY 1999 target of 50) and 84 Tribes worked with EPA, USDA, and other Federal agencies to develop Unified Watershed Assessments (UWAs) that identified the watersheds in greatest need of restoration and protection (APG 12).* The UWAs mark the first comprehensive, nationwide assessment of watersheds using water quality data, habitat conditions, endangered species listings, and other environmental factors.

EPA, its Federal partners, and States and Tribes work together to develop Watershed Restoration

IOWA'S BEAR CREEK BENEFITS FROM STREAM CORRIDOR RESTORATION

Landowners, working with Iowa State University professors, developed a riparian buffer nearly five miles in length on Bear Creek in central Iowa. This stream corridor restoration project utilizes plantings of grasses, shrubs, and trees to intercept eroding soil and agricultural chemicals from fields, slow flood waters, stabilize streambanks, provide wildlife habitat, and allow for alternative marketable products. Constructed wetlands have been developed around tile outlets to act as a sink for drainage high in nutrients. In FY 1999, this project was selected as one of 21 CWAP national restoration demonstration projects and received funding from EPA's 319 Program and other sources, including Pheasants Forever and the Leopold Center.

Action Strategies to address those watersheds identified in the UWAs as most in need of restoration. These actions will coordinate the work of many partners to protect and restore the full physical, chemical, and biological integrity of these watersheds. EPA targeted \$100 million of FY 1999 funding for non-point source grants to support implementation activities in high-priority watersheds.

To focus attention on entire water bodies instead of individual discharges, States, working with EPA, develop Total Maximum Daily Loads (TMDLs). A TMDL is a calculation of the maximum amount of a pollutant that a water body can receive from all sources of pollution and still meet water quality standards. TMDLs are part of a strategy to implement the water pollution controls and management measures necessary to reduce these pollutants. Over the next 15 years, almost 40,000 TMDLs need to be established; in FY 1999, States developed and submitted approximately 500 TMDLs to EPA for approval. EPA has developed better models to allow for the consideration of more factors, like runoff and air deposition, in TMDL calculations and has proposed stronger TMDL regulations to better identify impaired waters and develop and implement TMDLs for them.

Supporting Water Quality Work in Specific Places

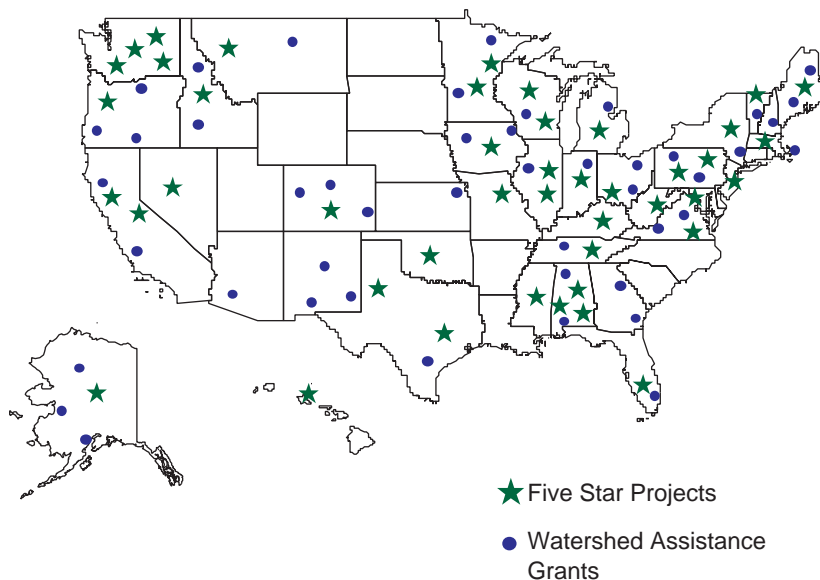
EPA actively supports State and local initiatives in specific high-priority areas throughout the country:

- The National Estuary Program (NEP) supports inclusive, community-based planning and action to restore and protect 28 of America's nationally significant estuaries. In FY 1999, EPA approved four Comprehensive Conservation and Management Plans (CCMPs), blueprints that NEPs develop and use to improve, restore, and protect their estuaries, for a cumulative total of 21 CCMPs.
- EPA's Gulf of Mexico Program, in partnership with the National Fish and Wildlife Foundation, launched the Gulf of Mexico Challenge Fund. This fund leverages voluntary contributions from the private sector to support projects identified by Gulf States and local coastal communities, protecting and restoring important habitats for recreational and commercial fisheries of the Gulf.
- From 1985 to 1999, the Chesapeake Bay Program Partners restored over 26,000 acres of Bay grass beds, contributing significantly to the current total level of 63,500 acres of submerged aquatic vegetation. Bay grasses provide food and habitat for waterfowl, fish, shellfish, and invertebrates. The grasses serve as a nursery habitat for many species of fish, such as young spot and striped bass, which seek refuge from predators in the grass beds.

To foster local partnerships, EPA supported the development of the Watershed Assistance Grants Program at River Network, a national nonprofit organization. Every dollar applied to the Watershed Assistance Grants program has leveraged an additional two dollars in matching funds and has assisted 46 local efforts across the country to start up new watershed partnerships and build outreach, educa-

tion, monitoring, and planning capabilities. *In FY 1999, to support local partnerships that restore wetlands and river corridors, EPA initiated the Five Star Partnership Program, under which EPA grantees funded 46 community projects, exceeding the Agency's FY 1999 goal by 16 projects (APG 13).* Five Star Partnerships involve student groups, conservation corps, corporations, watershed groups, and government agencies in demonstration projects, training, and other educational activities related to stabilizing stream banks, eliminating harmful non-native vegetation, replanting wetlands and riverside areas, and restoring natural water flows.

Community-Based Projects Supported in FY 1999 by the Five Star Restoration Program and Watershed Assistance Grants



Research Contributions

In FY 1999, EPA met its goal to provide data and information for use by States and EPA Regional Offices in assessing and managing aquatic stressors in watersheds to reduce toxic loadings and improve ecological risk assessment (APG 14). Specifically, EPA developed and disseminated a research strategy, completed in September 1999, for integrating economic assessments with ecological risk assessments of multiple aquatic stressors. This strategy will help environmental managers determine risks more accurately and more explicitly weigh manage-

ment options to choose those that provide the greatest degree of ecological protection. EPA also produced three publications on “knowledge-based approaches” to watershed assessments and a fourth on ecosystem classification and mapping.

Reduce Loadings and Air Deposition

To better protect aquatic ecosystems and public health, EPA works to reduce the pollution entering surface waters from discrete point sources (e.g., discharge pipes) and diffuse non-point sources (e.g., agricultural runoff). EPA has set an objective of reducing pollutant discharges from key point sources and non-point source runoff by at least 20 percent from 1992 levels by 2005. Air deposition of key pollutants impacting water bodies also will be reduced.

Reducing Point Source Pollution

To reduce point source pollution, it is critical to maintain and upgrade the nation’s municipal wastewater treatment facilities. In most cases, secondary treatment is the minimum level of treatment required for discharges from publicly owned treatment works. *In FY 1999, an additional 3.4 million people (for a cumulative total of 179 million) received the benefits of secondary treatment, meeting the Agency’s goal (APG 15).* Through the Clean Water State Revolving Fund (CWSRF) program, Congress

continues to provide funds to States for the construction and maintenance of wastewater treatment facilities. Since 1988, the CWSRF has financed 5,200 infrastructure projects across the country, with 859 of those funded in FY 1999. In addition, approximately \$400 million was provided for other infrastructure projects, including projects addressing the needs of the colonias (Hispanic rural communities) along the U.S.-Mexico boundary and Alaskan Native Villages.

Through the National Pollutant Discharge Elimination System (NPDES) permitting program, EPA and States are ensuring that all facilities requiring a permit have one that includes all conditions necessary to assure water quality protection. EPA, working closely with the States, regulates industrial point sources by developing effluent guidelines implemented through NPDES permits. In FY 1999, EPA proposed two new effluent limitation guidelines. The proposal for the Centralized Waste Treatment Industry will, if promulgated as proposed, prevent 18.8 million pounds of pollutants from entering the nation’s waters each year. The proposal for Synthetic-based Drilling Fluids, if promulgated as proposed, will reduce air emissions of the criteria air pollutants by 450 tons per year, decrease fuel use by 29,000 barrels per year of oil equivalent, and reduce the disposal of oily drilling wastes by 212 million pounds per year.

In addition to routine discharges from point sources, EPA and its municipal partners must also control episodic releases associated with wet weather sources of pollution from Combined Sewer Overflows (CSO), Sanitary Sewer Overflows, and storm water. *Five hundred thirteen communities implemented requirements in Storm Water Phase I permits and/or CSO Long Term control plans that are anticipated to contribute to improvements in their local watersheds (APG 16).* EPA is not yet able to measure actual improvement in watersheds; therefore, this goal has been dropped after FY 1999. Communities that implemented requirements in Storm Water Phase I permits and/or CSO Long-Term Control Plans were used as surrogate indicators of progress, which resulted in a significantly larger number of communities meeting the goal than originally forecast. EPA and States work with

TRIBAL DRINKING WATER AND SEWAGE DISPOSAL IMPROVED

With funding provided in FY 1999, 2,500 homes among 28 Tribes in Indian country with inadequate sewage disposal systems were connected to new or upgraded facilities. Over 300 homes using pit privies were placed on septic systems or connected to treatment works for the first time. Hundreds of failing septic or other wastewater treatment systems were repaired. Other homes were taken off septic systems and connected to community treatment works. In addition, with special funds earmarked for Alaskan Native Villages, the public health and sanitation systems of over 40 Alaska Native Villages were improved through the construction of drinking water and sewage disposal systems.

IMPROVING THE CHARLES RIVER WATERSHED

The lower Charles River (Boston, Massachusetts) is one of the busiest recreational rivers in the world. Yet, in 1995, swimming standards were met only 19 percent of the time, and boating standards only 39 percent. The "Clean Charles 2005" initiative aims to make the Charles River swimmable and fishable by Earth Day 2005. In April 1999, EPA issued its report card on the river's health giving it a B-, an improvement from a D in 1995. Achieving a swimmable, fishable Charles River means integrating permitting, enforcement, and voluntary programs on a watershed basis. For example, through the work of Federal, State, and local partnerships, inspections for illegal storm water connections are resulting in the elimination of roughly one million gallons of contaminated flow.

over 900 communities to promote compliance with the CSO requirements. Approximately 800 of these communities now have permits or other enforceable mechanisms that will minimize the amount of direct sewage discharges from CSOs into local waters and avoid major impacts such as shellfish bed and beach closures. The overwhelming majority—96 percent of municipal separate storm sewer systems serving populations greater than 100,000—are covered by permits requiring practices to minimize discharges of pollutants into aquatic habitat. EPA also issued a number of storm water general permits that will help reduce and prevent pollutant loadings from thousands of industrial and construction activities.

As part of the Clean Water Action Plan, EPA and the U.S. Department of Agriculture, in partnership with many others, released a final strategy to minimize impacts to water quality and public health from animal feeding operations and from application of animal waste to agricultural lands. This strategy is based on the expectation that owners and operators will adopt sound and economically feasible site-specific Comprehensive Nutrient Management Plans that will identify actions to meet clearly defined nutrient management goals.

Strengthening State Non-Point Source (NPS) Programs

EPA is working with States to upgrade their non-point source pollution control programs. *In FY 1999, 11 States submitted upgraded NPS programs for a cumulative total of 13, meeting EPA's goal. EPA approved all of these programs (APG 17).* The Agency expects virtually all States will complete this work by the end of FY 2000.

In FY 1999, Congress provided \$200 million for non-point source grants to States to upgrade existing non-point source programs and to support implementation of watershed restoration action strategies in priority watersheds. Through the CWSRF program, 25 States funded non-point source and estuarine projects valued at \$169 million dollars in FY 1999. EPA, in partnership with the U.S. Department of Agriculture, also has begun work with stakeholders to develop voluntary national standards for managing onsite/decentralized septic systems. The failure of these systems due to improper siting, design, installation, or maintenance is a major source of NPS pollution.

Reducing Atmospheric Deposition Loads

EPA initiated a pilot project in FY 1999 to explore inclusion of atmospheric sources of pollution in TMDLs. States will use the TMDL allocation process as a new tool to reduce pollution from these sources. Additionally, EPA added coastal atmospheric deposition monitoring sites for mercury and nitrogen to the nationwide network to improve the understanding of deposition on water quality; supported monitoring efforts, including the Great Lakes Integrated Atmospheric Deposition Network, which monitors deposition of toxic pollutants in the Great Lakes Region; and began a national modeling effort to collect and distribute high-quality deposition data for six pollutants.

Research Contributions

In FY 1999, EPA continued efforts to deliver support tools such as watershed models, which enable resource planners to select consistent and appropriate watershed management solutions and alternatives as well as less costly wet weather flow technologies. EPA is making progress toward this

goal, which it expects to reach in 2003 (APG 18).

Specifically, EPA is working to integrate its Storm Water Management Model (SWMM) with the geographic information system compatible with the Better Assessment Science Integrating Point and Non-Point Sources (BASINS) model. EPA's SWMM has become the fundamental program for estimating urban storm water and sewer design. EPA uses BASINS to develop TMDL estimates; this integration will allow the Agency to factor urban geographic information into watershed management decisions. These decision support tools will enable community-based water resource planners to select consistent, appropriate watershed management solutions to reduce the cost and increase the effectiveness of wet weather flow abatement facilities.

PROGRAM EVALUATION

EPA completed a program evaluation of the National Estuary Programs (NEPs) in FY 1999. The key objective was to assess the effectiveness of the NEP approach in managing the nation's estuaries and to identify program elements that could serve as successful management tools for other community-based environmental protection efforts. Major findings include the following: (a) the NEP approach improves the management of estuaries and their resources by integrating Federal, State, and local management efforts, enabling citizen participation and public involvement; and (b) EPA can improve program success by encouraging more local funding for implementation and by improving the structure for measuring environmental progress. In addition, EPA conducts a biennial review of each NEP implementing an approved plan to ensure adequate progress and to identify valuable information to be shared with other watersheds.

CONCLUSIONS AND CHALLENGES

EPA, States, Tribes, and local providers will strive to address the burden of implementing new drinking water regulations and guidance, including those focusing on microbials, DBPs, arsenic, radon, monitoring for unregulated contaminants, consumer confidence reports, small systems, and operator certification. The sheer number of requirements

strains State capacity, meaning a redoubled effort is key to the achievement of the goal of safe drinking water.

The Agency is concerned about long-standing impairments to aquatic systems (such as damage to fish habitat, loss of wetlands that are nurseries of aquatic life, and stream corridor degradation) that have become more apparent as the Agency and its partners move to address problems on a watershed basis. Management actions and investments targeted at in-stream and watershed-scale restoration are required to solve these types of impairments. As States develop implementation plans for their impaired waters over the next 15 years, many will need to include watershed restoration activities in order to meet Clean Water Act goals.

EPA will work to foster a national commitment to preventing non-point source pollution. Often the governmental entity responsible for preventing NPS pollution is not the traditional water quality agency, but rather a natural resource agency with a mission broader than pollution control. In many cases, the responsibility for preventing and abating NPS pollution falls to individual citizens. EPA, in partnership with other Federal and State agencies and Tribes, needs to intensify efforts to reduce NPS pollution and provide the information and financial incentives citizens need.

As EPA continues its progress toward the goal of clean and safe water, the Agency faces the key challenges of improving performance measurement to reflect outcomes and improving the ability to link annual program actions to long-term environmental outcomes. EPA will strive to increase the proportion of annual performance goals and measures that support environmental outcomes to make the connection between EPA's efforts and the environmental results achieved. The Agency will work to improve environmental information through existing and new monitoring and assessment strategies designed to fill data gaps and increase the understanding of watershed health. EPA also will strive to improve its efforts to provide sound data on the quality of the drinking water supply and to modernize the Safe Drinking Water Information System.

Every year different organizations and consumer-oriented journals conduct studies of what Americans rank as high priority items for ensuring a good quality of life. Clean and safe water has consistently placed in the top five areas of greatest importance. EPA, the principal Federal agency for regulating and protecting the waters of the United States, will continually strive to design, develop, and carry out programs to strengthen Americans' confidence in their water resources. Success depends on concentration, commitment, and cooperation toward finding the best solutions to ensure clean and safe water for the nation.

KEY MILESTONES FOR THE FUTURE

To accomplish the goal of Clean and Safe Water, EPA will continue to develop protective standards on a strong scientific foundation. The following will form the basis for updated point source permits and prevent increased pollutant loadings to America's rivers:

- By the close of 2002, EPA will issue effluent guidelines and nutrient criteria and will partner with States and Tribes to set water quality standards.
- By FY 2002, EPA and its partners will complete the establishment of a significant number of TMDLs for the most at-risk waters.

To further reduce wet weather pollution, EPA will:

- Work with States to issue additional guidance and ensure effective implementation of the CSO Policy, existing Storm Water rules, and new Storm Water Phase II rules so that by the end of FY 2002, Sanitary Sewer Overflow regulations will be in place.
- Review the effectiveness of States' revised non-point source plans and through the NEP, preserve, restore, and/or create 50,000 acres of habitat nationwide.

Public health protection is the cornerstone of the drinking water and fish and beach advisory programs. The Agency will support States and

Tribes in ensuring timely implementation of the following requirements:

- By 2001, EPA will issue drinking water regulations to limit arsenic and radionuclides in drinking water and to further improve treatment of surface waters and groundwater that face risk of microbial contamination.
- Through authorities under the Clean Air Act and Clean Water Act, EPA also will propose to strengthen controls on sources of mercury and other toxics impacting fish.
- Finally, by 2003, EPA will work with all States to adopt beach water quality standards.

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GOAL 3: Safe Food

Artwork by Jenna

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GOAL 3: SAFE FOOD

The foods Americans eat will be free from unsafe pesticide residues. Children especially will be protected from the health threats posed by pesticide residues because they are among the most vulnerable groups in our society.

OVERVIEW

Americans enjoy one of the safest, most abundant food supplies in the world due in part to the safe use of pesticides during food production, processing, storage, and transportation. Ensuring the safety of the food supply requires continued diligence by pesticide producers, users, and regulatory bodies. At the Federal level, EPA evaluates the safety of all new and existing pesticides and restricts pesticide use to those applications that do not pose unacceptable human health or ecological risks. The Food Quality Protection Act (FQPA) of 1996 challenged EPA to set new public health standards for pesticides (emphasizing safety for infants and children) and to review approximately 9,700 existing limits on pesticide residues on food over a ten-year period.

Ensuring the protection of children's health by accounting for their special sensitivities and exposures to pesticides remains a priority for the Agency. Unless a different factor is warranted, the Agency applies FQPA's additional ten-fold safety factor in risk assessments to account for children's special vulnerabilities. The Agency also updated pesticide toxicity testing guidelines to better assess risks to infants and children. Outreach activities targeted to address children's susceptibilities continue to provide additional protection by informing parents of potential hazards and steps they can take to minimize or prevent them.

EPA established two objectives in its Strategic Plan to guide its work toward meeting the goal of safe food: reducing risk from use of pesticides and reducing the use on food of pesticides that fail to meet health standards. In FY 1999, EPA progressed toward its long-term objectives by employing a combination of regulatory, outreach, and partnership activities including:

- Continuing the registration and re-registration programs, placing an emphasis on reviewing existing pesticides that pose the greatest health risks while registering lower-risk alternatives.
- Providing outreach, training, and education to pesticide users, applicators, and manufacturers.
- Encouraging the development and adoption of alternative means of pest control, including the use of non-chemical approaches and use of lower-risk pesticides.

FY 1999 PERFORMANCE

Reducing Risk from Agricultural Use of Pesticides

By 2005, EPA's objective is to reduce the risk from agricultural use of pesticides by 50 percent from 1995 levels. To meet this objective, EPA continues to develop and evaluate methods to determine trends in human health and environmental risk posed by pesticides. Unfortunately, the Agency currently lacks methods to measure directly or to estimate reliably these risks on a national or regional basis. Therefore, EPA uses a variety of program activities as surrogate indicators of progress. Although the Agency lacks reliable data on baseline health risks posed by pesticides and on the risks reduced by Agency actions, the overall risk reduction strategy and FY 1999 accomplishments reduced risk in several demonstrable ways.

In FY 1999, EPA committed to decrease adverse risk from agricultural pesticides from 1995 levels and assure that new pesticides that enter the market are safe for humans and the environment through such actions as registering 15 safer pesticide chemicals and biopesticides, issuing 95 new tolerances, and approving 90 new pesticide uses. The Agency exceeded these targets—registering 19 reduced-risk

pesticides (including 13 biopesticides), establishing 351 new pesticide food tolerances, and approving 681 proposed new pesticide uses—while ensuring that all pesticides reviewed met the new health safety standard of “reasonable certainty of no harm” (APG 19). Introducing new reduced-risk chemical pesticides and biopesticides provides food growers with safer pest control alternatives than were previously available. The availability of lower-risk pesticides, combined with public demand for safe food, often leads food growers to switch from higher-toxicity chemicals to reduced-risk alternatives. As the Agency registers new pesticides and ensures that each meets the applicable legal standards, EPA also ensures that pesticide packages have proper labeling and include easily understandable use instructions. These steps contribute to risk reduction by encouraging proper pesticide handling and use.

EPA also took steps in FY 1999 to reduce human health risks from organophosphates, a widely used group of pesticides that can affect human nervous systems. Organophosphates account for over half of all food crop insecticides used in the United States. To address the potential health

effects of these pesticides, EPA collaborated with the U.S. Department of Agriculture to form the Tolerance Reassessment Advisory Committee (TRAC). Working through the TRAC, EPA has released for public comment 29 of 40 planned risk assessments for organophosphates, 13 of which were released in FY 1999. Because of the widespread agricultural use of organophosphates, use restrictions, coupled with a lack of safer alternatives for certain uses, could seriously affect some American farmers. Thus, the TRAC has held a number of public technical briefings to communicate risk concerns and obtain the views of stakeholders.

In FY 1999, EPA, working to reduce risks to children through food, also eliminated the use of the organophosphate methyl parathion, one of the most toxic and widely used pesticides, on many crops that contribute to children’s diets, including all fruits and many vegetables. The Agency also further restricted the allowable uses of another organophosphate, azinphos methyl, on fruits and eliminated its use on sugar cane. In addition to addressing risks to children, these actions will reduce pesticide risks from worker exposure and agricultural runoff into water bodies.

EXAMPLES OF REDUCING RISK THROUGH REGISTRATION OF REDUCED RISK PESTICIDES

Tebufenozide. This insecticide was registered for use on apples and pears and may serve as an alternative for several organophosphates (OPs). Subsequent to this action, the Agency negotiated the cancellation of methyl parathion for use on these foods, which are common in children’s diets.

Bifenthrin. EPA registered new uses for the insecticide bifenthrin for use on many vegetables, including cabbage, certain legumes, eggplant, globe artichoke, canola, and sweet corn. EPA’s expedited registration of bifenthrin allowed growers of peas, beans, and sweet corn to begin replacing many OPs for the 1999 crop season. If commercial control is as successful as anticipated, bifenthrin may replace all organophosphate applications on peas, beans, and corn during the year 2000 growing season.

Reducing Applications on Food of Pesticides Not Meeting Health Standards

EPA’s objective is that by 2005, use on food of current pesticides that do not meet the new statutory standard of “reasonable certainty of no harm” will be substantially eliminated.

Under FQPA, EPA conducts periodic evaluations of pesticides to assess whether the use of pesticides in accordance with instructions included on their labels presents “reasonable certainty of no harm.” Performing this review ensures that all pesticides meet health standards outlined in FQPA. After completing a review and ensuring that the pesticide does not present human or environmental health threats, the Agency issues a Re-registration Eligibility Decision (RED). In cases where the reviews indicate that pesticides do not meet health and environmental requirements, EPA can modify the allowable uses of pesticides, including canceling use or limiting use to certified applicators.

FQPA also created the need for new science policies in a number of areas related to pesticide risk assessment. These include incorporating a ten-fold safety factor for infants and children, considering the risks posed by other pesticides sharing a common toxicity mechanism with the pesticide under review, and considering all non-occupational exposures to the pesticide when setting food tolerances. While the development and updating of science policies do not directly reduce risk from pesticide exposure, these activities enable the Agency to determine whether pesticides meet the FQPA health standards and to select adequate risk reduction measures for those which do not.

In FY 1999, EPA committed, through the re-registration program, to reassess 19 percent of the existing 9,721 tolerances (cumulative 33 percent) for pesticide food uses to meet the new statutory standard of “reasonable certainty of no harm.” The total

number of tolerances reassessed in FY 1999 was 1,445, or approximately 15 percent of the 9,721 requiring reassessment over the ten-year period from 1996 through 2006. The Agency fell short of achieving its annual performance target due to internal process changes aimed at achieving greater stakeholder involvement in the reassessment process and making the tolerance reassessment process more open to the agricultural community. Although the Agency suffered a slight shortfall in FY 1999, EPA has exceeded the FQPA statutory requirement of evaluating 33 percent of the 9,721 existing pesticide food tolerances, completing a net total of 3,430 reassessments (over 35 percent) (APG 20).

Additionally in FY 1999, the Agency completed 14 REDs. Each RED incorporates risk reduction measures, such as restricting use of products to certified applicators, canceling pesticide products, deleting uses, limiting the amount or the frequency

FIELD, REGIONAL, AND ENFORCEMENT ACTIVITIES SUPPORTING SAFE FOOD

Regions. EPA Regional offices seek to ensure the safety of the nation’s food supply by promoting use of reduced-risk pesticides, providing outreach and education to growers and private pesticide users, encouraging the use of alternative pest management strategies, and monitoring post-re-registration use of pesticides. EPA’s Regional Agricultural Initiative piloted four projects in the Atlanta, Chicago, San Francisco, and Seattle Regions during FY 1999 with the objective of increasing communication between EPA and stakeholders on FQPA implementation.

EPA Pesticide Laboratories. EPA’s pesticide labs provide unique support to food safety functions: setting tolerances, assessing exposure and ecological effects, and performing risk assessments and product chemistry validations. The labs also provide internationally recognized expertise in analyzing dioxin in food. For example, during the recent dioxin food contamination crisis in Belgium, the labs provided technical information and assistance on analyzing for dioxin in contaminated animal feed.

Enforcement Activities. EPA’s enforcement program contributes significantly to reduction of agricultural risk:

- Working with the EPA’s Regional offices to develop compliance monitoring strategies and conducting compliance assistance and enforcement activities when pesticides are suspended or canceled.
- Developing coordinated outreach/compliance assistance strategies and providing up-to-date information and compliance assistance to the farming community on changes resulting from regulatory actions.
- Addressing referrals from the Food and Drug Administration and/or U.S. Department of Agriculture for over-tolerance residues.

of use, improving use directions and precautions, and employing groundwater or surface water protections. For example, in FY 1999, one RED resulted in the voluntary cancellation of Vernolate for use on peanuts and soybeans, thus eliminating the use on these foods of an acutely toxic pesticide with potentially adverse developmental and neurotoxicological effects.

Other FY 1999 accomplishments include continuation of work with the U.S. Department of Agriculture on the TRAC to obtain broad-based input to the science policies and overall process for the tolerance reassessment program. This input to EPA's pesticide assessment science policies will help ensure the quality and acceptance of the Agency's pesticide risk evaluations and risk mitigation actions. In FY 1999, EPA also published a proposed rule for establishing FQPA Section 18 tolerances that provides guidance on submitting data required to establish tolerances for emergency exemptions. These exemptions allow States and Federal agencies to permit the unregistered use of a pesticide for a limited time if an emergency pest condition exists and no registered, effective pesticide is available.

Research Contributions

Titles III and IV of FQPA identify clear science needs consistent with the evaluation of aggregate exposures to pesticides from multiple sources and cumulative mechanisms of action. The Agency is supporting research to address major uncertainties in assessing the risks from exposure to pesticides and other toxic chemicals, particularly the risks posed to children. Major areas of emphasis and significant accomplishments under the FY 1999 research program include the following:

- Building and evaluating first-generation exposure models that predict total exposure and identify the pathways of exposure (e.g., hand-to-mouth, food, air) with the greatest risk implications for children. The exposure research program completed an initial model, called the Stochastic Human Exposure and Dose Simulation Model for Pesticides (SHEDS-Pesticides) and presented it to the Science Advisory Panel on September 2, 1999. While it is still in an early stage of development, the preliminary results have helped

researchers better understand the events and factors that lead to pesticide exposure. As development continues, the model will help identify areas of greatest uncertainty and those needing more research.

- Developing test methods and predictive models to evaluate variability in response to pesticide exposure due to factors such as age, sex, pre-existing disease, health and nutritional status, and genetic predisposition. This health effects research is an ongoing, long-term effort. The program will produce results over the next several years that will apply to several phases of FQPA implementation.
- Collecting and analyzing data on six target pesticides present in urine in individuals aged six and older under the National Health and Nutrition Evaluation Survey (NHANES-IV) and analyzing NHANES-III and earlier data on children. The study design was completed in 1998, and a two year sampling period began in 1999. Data from the study are expected to be available starting in 2001. The conceptual results should be applicable to exposure data on food residues and should enable the Agency to conduct at least preliminary or screening level risk assessments for intermittent, multi-chemical exposures.

PROGRAM EVALUATION

In FY 1999, EPA expanded a process evaluation initiated in 1998 to ensure that regulatory activities meet the FQPA standards. In carrying out the evaluation, the Agency found a need for greater public comment in the development of risk assessments and in risk management decisions. A greater public role in decision-making provides real-world information from a variety of outside parties and assists in informing Agency decisions. To facilitate public participation, EPA instituted a Risk Assessment/Risk Management Pilot for the organophosphate pesticides. EPA chose the organophosphates for this pilot because of their acute and chronic toxicity to humans and wildlife and their widespread application on crops and in residential and commercial settings. Activities facilitated through the pilot included public meetings, technical briefings, and

increased Agency attention to concerns raised by stakeholders. In FY 1999, EPA expanded this pilot by publishing additional preliminary risk assessments and science policy issue papers for public comment, allowing stakeholders to review these documents, provide comments, and contribute to their improvement. Through this pilot, the Agency will evaluate its risk assessment policies, procedures, and processes, providing more inclusive stakeholder participation and ultimately improving EPA's risk assessment process.

CONCLUSIONS AND CHALLENGES

EPA's approach to achieving the long-term strategic goal of ensuring a safe food supply combines regulatory, voluntary, and cooperative risk reduction strategies. While maintaining the high productivity of the registration, re-registration, and tolerance reassessment programs, the Agency also recognizes that program activities alone do not provide an adequate measure of effectiveness in achieving risk reduction. The Agency is continuing to develop more direct measures of risk, without impeding the progress of programs mandated by statute. The Agency's priorities in ensuring safe food remain to address those agricultural pesticides posing the greatest health risks, to encourage lower-risk means of pest control, and to protect vulnerable populations, particularly children, from pesticide risk. The Agency faces major challenges:

- Ensuring the consistency of science policies and regulatory decisions with the latest scientific standards.
- Maintaining a balance between stakeholder participation and meeting statutory deadlines.
- Measuring the effects of regulatory actions in terms of risk prevention or addressing and measuring the effects in terms of risk reduction.
- Funding the re-registration program after FY 2001, when the fees that support it expire.
- Balancing needs for resources between immediate program requirements and the resource-intensive commitment to develop tools to track progress toward outcome-oriented goals.

KEY MILESTONES FOR THE FUTURE

- Complete in FY 2000 the reassessment of all organophosphate pesticides and take appropriate action to reduce agricultural pesticide risk and eliminate those that do not meet current health standards.
- Reassess in FY 2000 the tolerances for atrazine to provide protection for groundwater supplies.
- Finalize in FY 2000 the FQPA science policies to assure that aggregate exposure and cumulative risk are appropriately addressed in pesticide risk assessments.
- Complete by FY 2002 an additional 33 percent of the 9,721 tolerances requiring reassessment.
- Complete by FY 2006 actions on all 9,721 tolerances subject to reassessment under FQPA and all 612 pesticide active ingredient cases subject to re-registration.

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GOAL 4: Pollution Prevention and Reducing Risks

Artwork by Sherilynn

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GOAL 4: PREVENTING POLLUTION AND REDUCING RISK IN COMMUNITIES, HOMES, WORKPLACES, AND ECOSYSTEMS

Pollution prevention and risk management strategies aimed at cost-effectively minimizing and, where feasible, eliminating emissions and contamination will result in cleaner and safer environments in which all Americans can reside, work, and enjoy life. EPA will safeguard ecosystems and promote the health of natural communities that are integral to the quality of life in this nation.

OVERVIEW

Responding to the complex array of pollutants and threats to human health and ecosystems requires that public agencies take a preventive, multimedia approach to protecting the public. Experience has shown that it is cheaper and smarter to prevent pollution before it causes harm than to clean it up afterward. Vital to EPA's pollution prevention strategy are cooperative and voluntary activities, including making data available to the public on the risks posed by pesticides and industrial chemicals and promoting the use of safer alternative technologies, greener chemicals, safer farm practices, and industrial processes that use less or recycle. In carrying out these activities, the Agency places special emphasis on protecting children's health, as children are often more susceptible to harm from exposure to hazardous compounds than are adults.

EPA's pollution prevention efforts draw on many of the Agency programs, including pesticides, chemical management, indoor air pollution, waste management, and supportive research. In addition, many pollution prevention activities require sharing responsibilities with other Federal agencies, States, Tribes, private industry, and nonprofit organizations.

In its Strategic Plan, EPA established seven objectives to work toward this goal: reducing community exposure to pesticides, fighting lead poisoning, ensuring safe use of commercial chemicals, creating healthier indoor air, fostering pollution prevention, reducing the quantity and toxicity of waste, and assessing environmental conditions on Tribal lands. The following pages discuss progress toward these objectives.

FY 1999 PERFORMANCE

Reducing Community Exposure to Pesticides

By 2005, EPA's objective is that public and ecosystem risk from pesticides will be reduced through migration to lower-risk pesticides and better pesticide management practices, improving education of the public and at-risk workers, and forming "pesticide environmental partnerships" with pesticide user groups.

The Agency is currently developing a policy to assess cumulative risks of pesticides. Presently, the Agency has no precise means of determining the amount of risk reduction resulting from regulatory activities. Further, national indicator data, such as the incidence of pesticide poisonings, do not exist or have proven unreliable (APG 21). EPA has, however, undertaken a number of efforts aimed at reducing risk. In FY 1999, the Agency concentrated on increasing its education efforts targeted at workers and health care providers, developing rules to protect groundwater resources, and continuing the development of the pesticide environmental stewardship program.

As a part of its education efforts, EPA established the Pesticide Safety Website (<http://www.epa.gov/pesticides/safety>) to provide information about pesticide safety, in both English and Spanish, to workers, certified applicators, and health care providers. EPA also published "Pesticides and National Strategies for Health Care Providers," which outlines recommendations for improving the training that health care providers receive on health concerns related to pesticide exposures.

URBAN PESTICIDE MISUSE

In FY 1999, EPA funded 33 projects to address the problem of urban pesticide misuse, including the following:

- A Florida project that developed posters about safe pesticide use for elementary, middle, and high schools.
- An innovative public education project in Pennsylvania to inform consumers about the dangers and misuse of pesticides.
- A Washington State University effort to train pesticide retail outlet salespersons.

With continued public education through projects such as these and enforcement of pesticide laws, EPA expects to see the number of cases of accidental pesticide poisoning and misuse decline.

Pesticide contamination threatens groundwater throughout the United States. EPA is developing a groundwater rule that will prohibit use of certain leaching pesticides unless a State or Tribe has an EPA-approved Pesticide Management Plan. Also, the Agency supported States in the development of groundwater plans while developing the final rule, which is called the Groundwater Management Plan. EPA approved 19 State plans and one Tribal plan to manage the use of specific pesticides to ensure the protection of groundwater.

The Pesticide Environmental Stewardship Program (PESP) is a voluntary program that helps pesticide users, such as farmers and applicators, identify specific risk reduction activities. In FY 1999, EPA reviewed and approved 69 strategies that lower the risk of pesticide use. The Agency exceeded its target of 42 strategies (cumulative). These partnership strategies provide information on how the member plans to use Integrated Pest Management (IPM), conduct grower education, implement use reduction, improve pesticide application techniques, and employ other means to reduce risk from pesticide use.

Fighting Lead Poisoning

By 2005, EPA's objective is that the number of children with high levels of lead in their blood will be significantly reduced from the early 1990s.

Almost one million children in the U.S. have blood-lead levels of 10 $\mu\text{g}/\text{dL}$ or above, high enough to impair their ability to think, concentrate, and learn. Many of these children live in low-income or minority communities. To help address the problem, the Agency awarded a grant to Hope for Kids to conduct a national door-to-door campaign to provide parents with lead exposure prevention information and initiated a major effort to increase awareness of lead hazards among the Hispanic community.

EPA implemented many components of the Agency's lead-based paint poisoning prevention program in FY 1999. The program seeks to ensure that there is a well-qualified, trained lead hazard control workforce; to promote public awareness of lead-based paint hazards and ways to prevent lead poisoning; and to establish necessary standards for the elimination of lead hazards. *Through FY 1999, EPA continued building the lead-based paint abatement training and certification program by approving programs in 28 States, one territory, and the District of Columbia. EPA also approved programs for two Tribes. EPA had hoped that more States would have completed the process of picking up the program by the end of FY 1999. Two additional States have picked up the program since the end of FY 1999, and others are expected to pick it up during the remainder of FY 2000. EPA is, however, reassessing plans for managing the training and certification program in the future (APG 22).*

In FY 1999, EPA initiated or established several regulations necessary to address the hazards from lead-based paint, including the Lead Renovation Information Rule. Under this rule, apartment owners must provide renters with information on the dangers of lead poisoning and ways of protecting their children during building renovations. EPA also is working to address comments received on the proposed Lead Hazards Standards Rule, which will identify hazard levels for lead in dust and soil and hazardous conditions associated with lead-based paint. The Agency continued to make progress toward issuing training and certification rules on renovation and remodeling activities and de-leading of bridges and structures. Once all these regulations are issued, EPA will have established a full set of national standards for safe, effective reduction of lead-based paint hazards.

Ensuring Safe Use of Commercial Chemicals

By 2005, EPA has committed that of the approximately 2,000 chemicals and 40 genetically engineered microorganisms expected to enter commerce each year, the Agency will significantly increase the introduction by industry of safer or “greener” chemicals, decreasing the need for regulatory management.

The Agency conducted a number of important activities to support this objective during FY 1999. EPA continued its work in the New Chemicals Program, launched the Chemical Right-to-Know (CRTK) Initiative, began implementing the Endocrine Disruptor Screening Program (EDSP), issued green chemistry awards, and conducted research on risk assessment models and tools.

ADDRESSING ENDOCRINE DISRUPTORS

In recent years, EPA has focused attention on the potentially disruptive effects of synthetic chemicals on the hormone, or endocrine, systems of humans and wildlife. Concerns about these impacts prompted Congress to direct EPA in the 1996 Food Quality Protection Act to implement a program for evaluating chemicals for potential impacts on endocrine systems. The Endocrine Disruptor Screening Program (EDSP) will screen pesticides and industrial chemicals for estrogenic, androgenic, and thyroid effects. EPA completed a number of key activities to implement EDSP in FY 1999, including convening a formal peer review on a proposed statement of policy on EDSP, augmenting understanding of endocrine disruptors by completing a high-throughput pre-screening (HTPS) feasibility demonstration study, initiating the development of a Priority Setting Database, and commencing work on standardizing several screens and tests for use in the EDSP.

Under its New Chemical Program, EPA reviews chemical information submitted by manufacturers to evaluate the risks these new chemicals might pose to human health and the environment before the chemicals are allowed to be used in commerce. When potential new uses of a chemical could pose an unreasonable risk to human health or the environment, EPA can restrict the conditions of its use.

The Agency reviewed 1,717 new chemicals and organisms, which represents achievement of the FY 1999 goal of reviewing for safety all new chemical submissions each year (APG 23). The Agency restricted environmental releases and set protective standards for workers for five percent of these chemicals. In addition, EPA reviewed 36 submissions of chemicals with the potential for being persistent, bioaccumulative, and toxic (PBT) and took regulatory action on the 13 identified as PBTs.

In FY 1999, EPA launched the Chemical Right-To-Know Initiative to better understand the effects of high production volume (HPV) chemicals on human health and the environment and to increase public understanding of the hazards of these chemicals in commerce. HPV chemicals are those that are manufactured or imported at volumes exceeding one million pounds per year. EPA plans to make available basic screening-level information on 2,800 HPV chemicals that may impact public health and the environment and to ensure that detailed information is available for those industrial chemicals to which children may be exposed.

Through the HPV Challenge Program, EPA asked industry to generate data on the effects of the chemicals they manufacture and/or import. By December 1999, over 400 companies and consortia had voluntarily committed to make public, before the end of 2005, basic hazard data on over 2,000 of 2,800 HPV chemicals. Their commitments include identifying existing information and conducting the testing necessary to fill essential data gaps.

In 1999, EPA received 134 nominations in five categories for the Presidential Green Chemistry Challenge Awards. This was more than two and a half times the target. The pollution prevention efforts outlined in these nominations, many of which are already being employed by industry, have led to reductions in the use and emissions of hazardous substances, savings in capital investments, reduced worker exposure, and improved product yields.

Research Contributions

Structure-Activity-Relationship (SAR) screening of pesticides and industrial chemicals and in-vitro screening methods are important complements to

the work performed under the CRTK Initiative and the Green Chemistry program. This work supports EPA's efforts to screen thousands of chemicals for a range of toxic effects. For example, EPA completed work on biochemical and cellular techniques to measure the metabolism and toxic responses of representative reactive industrial organic chemicals that can cause toxicity through a variety of mechanisms.

Creating Healthier Indoor Air

EPA's objective is that by 2005, 15 million more Americans will live or work in homes, schools, or office buildings with healthier indoor air than did in 1994.

Indoor air pollution can pose high human health risks, especially to sensitive populations such as children. EPA's efforts focus on raising public awareness of the potential risks of indoor air and forging partnerships with community-based groups to influence individuals and schools to take action to reduce potential risk.

Since the indoor environments program relies on voluntary efforts, tracking progress toward goals presents challenges. *The lead time needed to conduct and analyze survey results means that the Agency will not be able to report FY 1999 data until December 2000. 1998 data suggest that EPA is progressing toward its FY 1999 goal of having 700,000 additional people live in healthier residential environments (APG 24).*

One important component of achieving healthier indoor air is reducing exposure to radon. In 1998, a total of approximately 211,700 radon-resistant homes were built. Approximately 565,000

people live in these homes. In addition, based on estimated sales of radon mitigation fans, EPA estimates that 138,800 people now live in radon-mitigated homes. In September 1999, radon-resistant construction techniques were incorporated into the new International Residential Code.

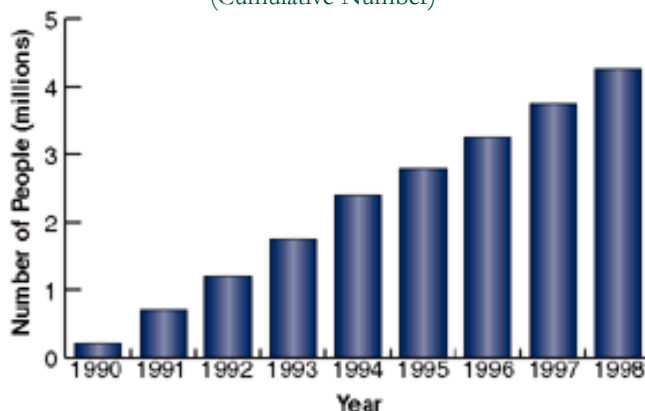
EPA conducted a number of additional activities aimed at reducing indoor air pollution in FY 1999. For example, EPA collaborated with the American Medical Association and the Consumer Federation of America to develop a multimedia campaign addressing secondhand smoke. The results of a survey conducted for EPA suggest that in FY 1999 the Agency's education and outreach activities resulted in more than 195,000 children not being exposed to environmental tobacco smoke in their homes. In addition, a total of 2,000 schools adopted "Indoor Air Quality Tools for Schools" in FY 1999, resulting in 1,050,000 students and staff learning and working in healthier school environments. The program provides guidance to schools on how to significantly improve their indoor air quality, reduce asthma risk factors, and protect children's health. EPA has not yet reached the goal of 1.5 million students and staff working in healthier environments and is looking at new incentives for schools while continuing to provide information about the benefits of prevention.

EPA also has completed the largest ever environmental study of large commercial office buildings. The Building Assessment Survey and Evaluation collected tens of thousands of environmental measurements and surveyed occupant perceptions of indoor air quality in 100 office buildings nationwide. These data will be used to assess exposure and devise risk reduction strategies for office buildings.

Research Contributions

Research completed in FY 1999 helped identify methods that characterize the impact of indoor air pollution on human health. For example, EPA completed documentation for well-characterized models of asthma in both mice and rats that exhibit many of the hallmarks of human allergic asthma. Such research substantially expands EPA's ability to evaluate the effects of pollutant exposures and their impacts on both normal and sensitive subpopulations.

People Living in Radon-Resistant Homes
(Cumulative Number)



Fostering Pollution Prevention

By 2005, EPA has committed to reduce by 20 percent (from 1992 levels) the quantity of toxic pollutants released, disposed of, treated, or combusted for energy recovery. Half of this reduction will be achieved through pollution prevention practices.

EPA is working to broaden the use of pollution prevention practices through its focus on manufacturing sector wastes (as measured by the Toxics Release Inventory), the Design for the Environment Program, and the Pollution Prevention Framework.

Manufacturing Sector Wastes (TRI)

In FY 1999, EPA worked toward its goal of reducing (by two percent) the quantity of TRI pollutants released, treated, or combusted for energy recovery, but based on the most current data available (1997), recent trends indicate that the Agency will not meet this goal (APG 25).

The FY 1999 annual performance goal is based on changes in non-recycled wastes reported to TRI. Due to time lags associated with reporting and analysis, 1997 data were reported in 1998 and made public in 1999. Data for 1999 will not be available until 2001.

The 1997 data suggest a reversal in what had previously been a multi-year reduction trend. In 1997, TRI chemical non-recycled wastes generated by the manufacturing sector actually increased by 1.1 billion pounds (11.3 percent). A substantial portion of this increase is attributable to large production increases in the manufacturing sector. When the increase in non-recycled wastes is normalized or adjusted to take into account increased production, the increase in non-recycled wastes that is unrelated to growth is shown to equal 518 million pounds (5.3 percent). Further, much of this increase is attributed to a small number of woodtreating facilities.

Additional perspective and understanding can be obtained by considering the P2 waste reduction efforts since 1992, the baseline year for EPA's long-term goal. When changes in waste are normalized for the production increases that occurred between 1992 and 1997, non-recycled wastes unrelated to growth are shown to have declined by 19.5 percent

(2.1 billion pounds). In addition, recycled wastes unrelated to growth are shown to have decreased five percent during the same period.

The sudden increase in chemical non-recycled wastes reported revealed a weakness in the Agency's FY 1999 performance goal. The measure did not take into account fluctuations in industrial production. EPA has adjusted the measure for FY 2001 so it can more accurately reflect the results of the Agency's pollution prevention efforts.

MICHIGAN SOURCE REDUCTION INITIATIVE

The Michigan Source Reduction Initiative (MSRI) was a 30-month partnership of the Natural Resources Defense Council (NRDC), the Dow Chemical Company, and local environmentalists, with funding and support from EPA. Based on a commitment to cut waste and emissions using pollution prevention techniques, the MSRI identified a number of actions, from simple input and process modifications to more considerable investments, that ultimately reduced emissions by 43 percent (from one million to less than 0.6 million pounds) and wastes by 37 percent (from 17.5 million to 11 million pounds)—saving the company \$5 million a year in the process. The final project report was completed in September 1999. To build on the success of the MSRI, EPA and NRDC have begun to identify and collaborate with other facilities through the Voluntary Initiative for Source Reduction.

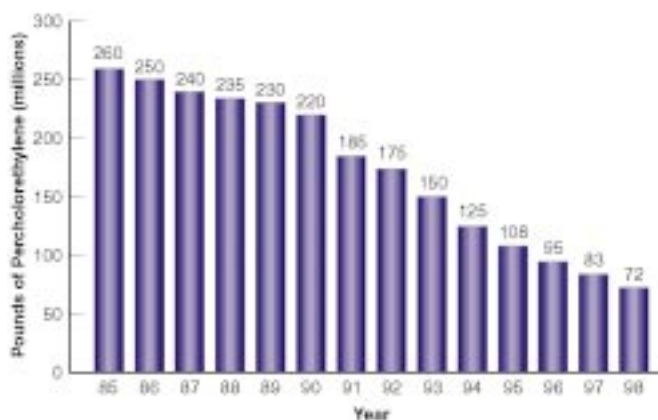
Design for the Environment (DfE)

The DfE program helped nine industries voluntarily implement practices to reduce risk to their workers and the environment through cost-effective strategies. Combined DfE/industry partnerships affected over 140,000 companies and two million workers and resulted in reduced releases of millions of pounds of hazardous chemicals, reduced exposure of workers, increased awareness of safer practices, and increased development of environmentally preferred products.

The DfE program achieved these results with a diverse set of industries, including the fabricare industry, industrial laundry formulators, and litho-

graphers. The fabricare industry is becoming increasingly aware of the health concerns associated with perchloroethylene and is switching to other, cleaner technologies such as liquid carbon dioxide and professional aqueous cleaning techniques. As a result, dry cleaners have been steadily reducing their use of perchloroethylene over time (e.g., an 11 million pound reduction in 1998; see chart on the decrease in perchloroethylene use by the dry cleaning industry). EPA's partnership with six industrial laundry formulators led to the development of 10 new environmentally preferable detergents with a growing customer base. Finally, outreach efforts with 50,000 lithographers have prompted a switch from volatile organic compounds to cleaner washes for presses, especially in Clean Air Act (CAA) non-attainment areas.

Perchloroethylene Use By U.S. Dry Cleaning Industry



Pollution Prevention (P2) Framework

At the early stages of new chemical research and development, companies often have limited chemical information. EPA responded by developing the Pollution Prevention (P2) Framework, a computerized set of methods that predict risk-related properties of chemicals based on chemical structure and enable stakeholders to identify environmentally protective products and processes. EPA conducted two national workshops and ten in-depth case studies in FY 1999, showing how use of the P2 Framework could result in development of safer new chemicals. A widely distributed Environmental Cost Accounting Study documented how use of the EPA P2 Framework brought dramatic savings in research and development and product development costs and has reduced time to market.

Reducing the Quantity and Toxicity of Waste

By 2005, EPA's objective is that the Agency and its partners will increase recycling and decrease the quantity and toxicity of waste generated.

In FY 1999 EPA made progress toward this objective in the areas of municipal solid waste (MSW) and hazardous waste recycling as well as Persistent Bioaccumulative Toxics (PBTs). ***FY 1999 MSW recycling and generation data are not currently available. Analysis to determine this information no longer occurs annually and the next analysis is anticipated in 2001 (APG 26).*** 1997 data indicate that 28 percent (61 million tons) of MSW was diverted from land filling and combustion and that per capita MSW generation was at 4.4 pounds per day. MSW generation increased slightly in response to the robust economy, but continued efforts in MSW reduction are expected to bring per capita generation back down in future years.

The Agency encouraged recycling of hazardous wastes through a rulemaking and established a baseline for future assessment of progress. EPA also proposed a rule for certain hazardous wastes that would encourage recycling of the wastes by allowing for extended storage accumulation time.

PBTs such as mercury, dioxin, and DDT present a continuing health and environmental concern. In November 1998, EPA issued the Draft Resource Conservation and Recovery Act (RCRA) Waste Minimization PBT Chemical List and a draft Mercury Action Plan. In July 1999, EPA broadened the list into an Agency-wide pollution prevention PBT list. A draft trends analysis based on this list indicates that significant reductions for a number of chemicals already have been achieved.

The Agency-wide PBT list is expected to become final in April 2000. EPA will use this list to focus waste minimization partnership efforts on reducing the generation and toxicity of hazardous PBT waste by 50 percent by 2005. EPA has set up two PBT-related partnerships to begin work toward this goal. In conjunction with the North East Waste Management Officials Association, EPA will target reductions in the generation of hazardous wastes containing mercury and other PBT chemicals. Secondly, the National Pollution Prevention

REDUCING MERCURY USE IN HOSPITALS

On June 24, 1998, EPA and the American Hospital Association signed a voluntary agreement to virtually eliminate mercury from waste generated by U.S. hospitals by the year 2005. The parties, together with 80 non-governmental organizations, also agreed to reduce overall hospital waste volume by 33 percent by 2005 and by 50 percent by 2010 and to jointly identify additional substances to target for pollution prevention and waste reduction opportunities.

Roundtable will sponsor a number of PBT reduction workshops when the final list of PBT chemicals is published in April 2000.

In addition to these waste minimization activities, the PBT Initiative developed a smaller list of chemicals for National Action Plan development. In FY 1999, the Agency completed seven draft National Action Plans, which address 11 priority PBTs (excluding dioxin). The Agency also began developing baseline data on PBTs in humans, other organisms, and the environment at large.

Assessing Environmental Conditions in Indian Country

By 2003, EPA has committed that 60 percent of Indian country will be assessed for its environmental condition, and Tribes and EPA will be implementing plans to address priority issues. In FY 1999, both EPA and Tribes made significant progress in developing the capacity to address the environmental needs on Tribal lands.

EPA is committed to assessing environmental conditions to identify high-priority human health and environmental risks on Tribal lands. A lack of comprehensive environmental data, however, severely impacts the Agency's ability to complete this work. ***For FY 1999, EPA established a goal of collecting ten percent of Tribal environmental baseline information and establishing an additional ten Tribal/EPA environmental agreements or environmental priorities; EPA has met and exceeded its goal by collecting ten percent of the baseline information and establishing 46 additional Tribal agreements (APG 27).*** Review of these data confirmed numerous gaps in environmental information for Tribal lands.

EPA is working with available boundary information and new data management software to establish a process that will facilitate Tribal-specific data retrievals. Despite the difficulties encountered in developing a baseline assessment, EPA and Tribes have continued to work together to address concerns about the environmental conditions on Tribal lands. EPA encourages Tribes to take responsibility for implementing Agency programs. An additional 24 Tribes received EPA program authorizations/approvals, raising the total number of program approvals for Tribes to 270 in 1999 from 90 in 1995.

PROGRAM EVALUATION

EPA took a number of steps in FY 1999 to assess the effectiveness of its efforts to reduce risk and promote pollution prevention. In FY 1999, two performance evaluations were completed and a third was started. These evaluations will help the Agency assess both program effectiveness and progress toward achieving annual and strategic goals.

The Certification and Training Assessment Group (CTAG) completed an assessment of the pesticide applicator program and in January 1999, released a report entitled "Pesticide Safety for the 21st Century." The analysis provides recommendations for guiding the future strategy and direction of the Certification and Training Program.

The Agency is also conducting a national assessment of the Worker Protection Standards for agricultural pesticides. As with the CTAG, the assessment group includes members from EPA, the U.S. Department of Agriculture, the Labor Department, the Department of Health and Human Services, State regulators, Tribes, farm worker advocacy groups, and others. The results of the evaluation are expected in approximately two years.

In August 1999, the General Accounting Office (GAO) published "Indoor Pollution: Status of Federal Research Activities" (GAO/RCED-99-254). The report reviewed federally funded indoor pollution research across numerous federal agencies. The key finding of the report is that notable progress in indoor pollution research has been made, but many gaps in knowledge and understanding of the problem remain.

CHALLENGES AND CONCLUSIONS

The Agency and its partners made important strides toward meeting the goal of preventing pollution and reducing and cost effectively managing the risk posed to human health and the environment from toxic chemicals, chemical wastes, and pesticides. EPA has taken important steps to foster the transition to safer pesticides and reduce the pesticide levels in food, groundwater, and fragile ecosystems. The Agency is nearing completion of a national infrastructure to abate lead and protect our children from lead poisoning. EPA has begun the process of collecting data on the hazards of high production chemicals common in everyday life. The Agency is extremely encouraged by the steps industry has taken voluntarily to take responsibility for preventing and managing industrial pollution. EPA has begun a campaign to improve indoor air quality that particularly affects our children's health. But a number of challenges remain, and the Agency needs to further its efforts in many areas:

- Continue to base its regulatory and program decisions on good data and sound science.
- Help farmers transition to safer pesticides and farm practices while at the same time preventing undue disruption of the agricultural economy and the abundance of food for all Americans.
- Maintain the purity of the nation's limited groundwater supplies from contamination by waste, pesticide, and chemical pollution.
- Protect the nation's workers, particularly farm workers and workers who handle toxic chemicals, from exposure.
- Protect families in their homes and children in schools from exposure to toxic household chemicals and pesticides and prevent the misuse of these products.
- Continue to find new ways to provide positive incentives to industry to voluntarily take responsibility for reducing pollution and establishing an ethic of shared responsibility for a sustainable and healthy environment.
- Continue to educate industry, the public, and particularly our children about chemicals, pesti-

cides, and how to prevent pollution. EPA needs to continue to share its knowledge to empower industry, communities, and families to protect themselves as well as the places they live, work, and enjoy life.

- Focus special attention on the Tribes, children, elderly, poor, and urban inhabitants that are disproportionately affected by pollution.
- Improve the quality and meaningfulness of data by developing better methods to assess and measure the results of our work.

Much remains to be done and new challenges will emerge, but EPA and its partners continue to make steady progress in preventing pollution and reducing the risk from exposure to toxic chemicals and pesticides.

KEY MILESTONES FOR THE FUTURE

EPA will continue to work to prevent and/or reduce pollution and the risk to humans, wildlife, and fragile ecosystems. Over the next couple of years, a number of key milestones will mark progress:

- In FY 2000, four widely used herbicides will be subject to a rule that provides a new approach to protect groundwater from pesticide contamination. The Groundwater Pesticide Management Rule is designed to retain the benefits from the continued use of these pesticides while minimizing the risks to human health and the environment by preventing contamination from reaching critical levels in groundwater.
- EPA is working with stakeholders to design a voluntary program to make toxicity testing data available to the public on the special impacts industrial chemicals may have on children.
- The High Production Volume (HPV) Challenge Program is addressing serious deficiencies in the availability of basic health and environmental hazard data for 2,800 high production volume chemicals. In FY 2000, EPA will complete the review of more than 300 Test Plans submitted by industry and publish the HPV Chemicals Test Rule.

- EPA is developing and validating screening assays for endocrine disruption. The Agency is going to great lengths to ensure that valid test methods are available for use in the screening program. EPA is also coordinating with other Federal agencies to develop a comprehensive government-wide endocrine disruptor research strategy.
- EPA will promulgate four major lead rules. One will set certification and training standards for lead-based paint abatement activities involving the de-leading of bridges and superstructures. Another will set similar standards for building renovation and remodeling. A third rule will establish health-based standards for lead in paint, soil, and dust. A fourth will establish new disposal standards for lead-based paint debris.
- A lack of comprehensive environmental data severely impacts the Agency's ability to properly identify risk to human health and the environment on Tribal lands. Progress toward building Tribal and EPA infrastructure and completing the collection of 20 percent of baseline environmental data for Tribal lands will enable EPA and the Tribes to identify high priority human health and environmental risks.

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GOAL 5: Waste Management

Artwork by Nicholas

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GOAL 5: BETTER WASTE MANAGEMENT, RESTORATION OF CONTAMINATED WASTE SITES, AND EMERGENCY RESPONSE

America's wastes will be stored, treated, and disposed of in ways that prevent harm to people and to the natural environment. EPA will work to clean up previously polluted sites, restoring them to uses appropriate for surrounding communities, and respond to and prevent waste-related or industrial accidents.

OVERVIEW

Improper waste management and disposal threatens human health and the maintenance of healthy ecosystems. Uncontrolled hazardous and toxic substances, including radioactive waste, migrate to groundwater, surface water, and the air—ultimately affecting streams, lakes, rivers, and water supplies. To protect against these risks, EPA has developed and implemented policies to clean up active and inactive waste disposal sites; promote safe waste storage, treatment, and disposal; and prevent spills and releases of toxic materials. The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA or Superfund) and the Resource Conservation and Recovery Act (RCRA) provide the legal authority for most of EPA's work toward this goal.

EPA and its partners use Superfund authority to clean up inactive and abandoned waste sites and, when possible, to encourage the redevelopment of these sites through the Agency's Brownfields program. Under RCRA, EPA works in partnership with States and Tribes to address risks associated with leaking underground storage tanks and with hazardous and non-hazardous waste generation and management at active facilities. Finally, EPA uses the authority of the Clean Air Act, Clean Water Act, and the Oil Pollution Act of 1990 to protect against spills and releases of hazardous materials.

EPA established two objectives to guide work toward the FY 2005 goal: ensure progress toward effective and efficient cleanups and ensure progress toward effective waste and hazardous material management, while providing capabilities to respond to all emergencies.

FY 1999 PERFORMANCE

Ensuring Progress Toward Effective and Efficient Cleanups

EPA's objective is that by 2005, the Agency and its partners will reduce or control the risk to human health and the environment at over 375,000 contaminated Superfund, RCRA, underground storage tanks (UST), and Brownfield sites.

Superfund

Cleaning up a Superfund site is often a multi-stage and multi-year process involving site assessment, materials removal, remedial activities, and enforcement actions. The Superfund cleanup process begins with site discovery or notification to EPA of possible releases of hazardous substances by various parties, including citizens, State agencies, and EPA Regional offices. Once discovered, sites proceed through the Superfund cleanup process as follows:

- Preliminary assessment/site inspection (emergency removal, if necessary).
- Listing of the site on the National Priorities List (NPL—the nation's most pressing hazardous waste sites).
- Remedial investigation/feasibility study to determine the nature and extent of contamination.
- Record of decision, documenting which cleanup alternatives will be used.
- Remedial design/remedial action, preparing plans and specifications to implement site remedies.

- Construction completion, or completion of remedial actions for site cleanup.
- Post-construction activities, including statutory five-year reviews, to maintain site safety.
- NPL site deletion, which removes the site from the NPL.

These steps help EPA to determine and implement the appropriate response to threats posed by releases of hazardous substances. Releases that require immediate or short-term response actions are addressed under the Emergency Response program of Superfund.

Site assessment is the first step in determining actions needed to mitigate risk or whether a site meets the criteria for placement on the NPL. In FY 1999, EPA made final Superfund site assessment decisions on 744 sites, for a cumulative total of 35,683 site assessments since 1982. In addition, a cumulative total of more than 200 sites have been removed from the NPL to help promote the economic redevelopment of these properties. Removal from the NPL follows a determination that no further Superfund action is necessary at a site.

In FY 1999, the Superfund response program made significant progress in cleaning up hazardous waste sites, including sites at Federal facilities, and protecting public health and the environment. The pace of completing construction has been greatly accelerated. Over three times the number of con-

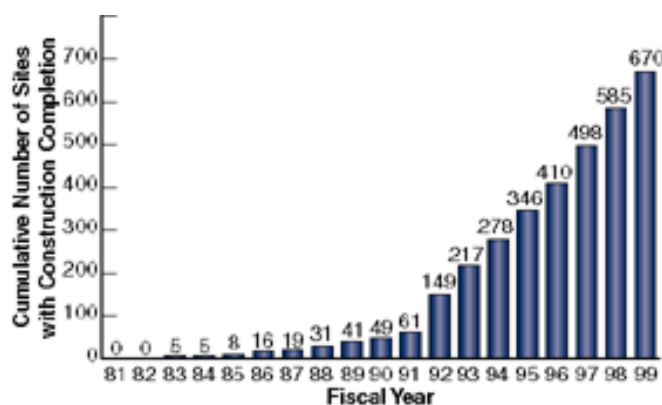
struction completions (521) have been achieved in the past seven years as compared to the first 12 years of the program, during which 149 construction completions occurred. The Agency has progressed from attaining 12 additional construction completions in 1991 to an annual average of over 74 per year from FY 1993 through FY 1999. More than 90 percent of the sites on the final NPL are either undergoing cleanup construction (remedial or removal) or are completed.

During FY 1999, 85 Superfund sites reached construction completion, meeting EPA's goal for a total of 670 over the life of the program (APG 28).

In FY 1999, 356 removal response actions were taken to immediately reduce the threat to public health and the environment, for a total of almost 6,000 over the life of the program. Since 1982, the Superfund program has cleaned over 216 million cubic yards of hazardous soil, solid waste, and sediment and over 325 billion gallons of hazardous liquid-based waste, contaminated groundwater, and contaminated surface water. In addition, the program has supplied over 431,000 people residing at or near NPL and other Superfund sites with alternative water supplies in order to protect them from contaminated groundwater and surface water.

Federal facility sites, which include formerly used defense sites, abandoned mines, nuclear weapons production plants, military ranges, fuel distribution areas, and landfills containing waste from Federal facilities, also are addressed under Superfund. EPA works with the local communities, the Department of Defense, the Department of Energy, and other Federal agencies to promote faster, more effective, and less costly cleanup of these sites. The Agency provides technical and regulatory oversight at Federal facility sites on the NPL to ensure protection of human health, effective implementation of the program, and meaningful involvement of the public. Reuse is encouraged where appropriate. Accomplishments at Federal facilities in FY 1999 included six construction completions, 64 sites with remedial action initiated, 43 removal actions initiated, 47 removal actions completed, and one deletion from the NPL. EPA also assisted in addressing radioactive contamination at 20 Federally owned Superfund sites in FY 1999.

Accelerating Superfund Cleanup Progress



In the past seven years (FY 1993-1999), the Superfund Program accomplished over three times the number of construction completions than occurred in the program's first 12 years combined.

RECYCLING SUPERFUND SITES: FROM WOODTREATING TO WAREHOUSING

In Brooklyn Center, Minnesota, Wickes Furniture Co. has put a toxin-tainted industrial parcel back in useful service by building a new distribution center on the Joslyn Manufacturing and Supply Company Superfund site. The site had been on the Federal Superfund and State priority lists for environmental cleanup and had remained vacant since 1981. "It was one of the most heavily polluted sites in the country," said Jeff Hall, President of Real Estate Recycling of Minneapolis, which developed the 203,000 square foot distribution facility for Wickes on the property. "It's been a terrific story of corporate responsibility," with Joslyn's owners and their insurers spending some \$17 million over the past 18 years to clean up the site, Hall said. The Wickes facility, which opened in August 1999, employs about 80 people and occupies half of the 30-acre site.

An important element of managing the Superfund program is EPA's effort to settle cases quickly and to ensure that Potentially Responsible Parties (PRPs) pay their fair share of clean-up costs. ***In FY 1999, PRPs financed more than 80 percent of long-term clean-up actions undertaken at non-Federal facilities, exceeding EPA's goal of 70 percent for the year (APG 29).***

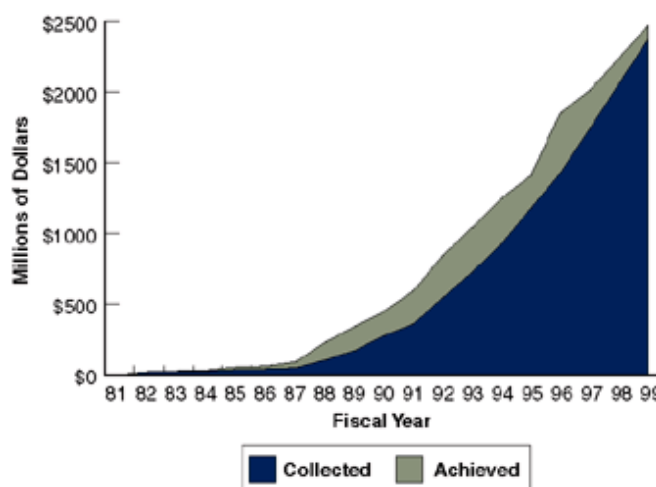
EPA recognizes that some PRPs may have contributed a very small amount of waste to a site. The Agency therefore is willing to enter into de minimis settlements with these PRPs and seek only limited contributions. In FY 1999, EPA entered into 38 of these settlements. As an incentive for PRPs to settle negotiations in the case of clean-up cost shares attributable to non-viable parties (i.e., companies or other parties who are insolvent or defunct), EPA also may make orphan share offers. Offers of orphan share compensation might include forgiveness of past costs or a waiver of future oversight costs at eligible sites. The Agency made 25 orphan share offers in FY 1999.

The Agency is also responsible for attempting to recover costs from PRPs in cases where EPA and others have already taken action to clean up sites. Recovering past costs not only ensures that polluters

pay for their activities but that resources will be available to clean up sites where PRPs either lack the funds for cleanup or cannot be located. EPA intends to address annually all those cases approaching statute of limitations (SOL) deadlines with past clean-up costs in excess of \$200,000. ***In FY 1999, EPA addressed all but one potential SOL case by negotiating settlements, referring cases to the Department of Justice for trial, or making a decision not to pursue cost recovery when no viable PRP could be located, meeting EPA's goal for the year (APG 30).***

In FY 1999, EPA's Superfund enforcement program obtained commitments from PRPs of over \$780 million to conduct future response work and to reimburse the Agency for its past costs. Of this amount, PRPs agreed to perform future response work valued at more than \$550 million or were ordered to or agreed to reimburse EPA \$230 million in past response costs. In addition, EPA collected and returned \$320 to the Superfund Trust Fund, which may include some of the \$230 million promised in settlements or by court-ordered judgements for past response costs. Since the beginning of the Superfund program in 1980, EPA has obtained commitments from PRPs or court-ordered judgements to reimburse the Agency for \$2,474 million in past costs; these costs are termed "achieved." Of that amount, \$2,378 million has been collected and returned to the Superfund Trust Fund. The annual progress of EPA's Superfund enforcement program since 1980 with respect to past costs "achieved" and collected is shown in the graph below.

Cumulative Superfund Costs Collected and Achieved



EPA engaged in several efforts to strengthen overall partnerships with States, Tribes, and other Superfund partners. For instance, 29 States, four Tribes, a number of contractors, and Federal agency representatives participated in the 1999 National Site Assessment Conference. EPA worked with the State of Illinois and EPA's Region 5 office to develop four State-led Records of Decision for action at Superfund sites. Region 5 also began an examination of methods to include Tribal cultural values more appropriately in the evaluation of site risks, and Region 6 initiated a study on potential quantitative methods for incorporating risks to Tribal cultural resources in the site priority-setting process. Additionally, EPA sponsored a national Tribal Risk Assessment conference to stimulate public dialogue on ways to consider Tribal cultural factors in risk decisions.

EPA also continued its efforts to work with potential real estate purchasers to address another problem area associated with Superfund sites. Often, the potential threat of CERCLA liability may pose a barrier to the beneficial reuse of some contaminated sites when potential new owners fear they will be held responsible for the inappropriate actions of others. To mitigate these concerns, EPA promotes redevelopment through Prospective Purchaser Agreements, which absolve prospective purchasers from cleaning up sites where they did not contribute to or worsen contamination. In FY 1999, EPA entered into 24 such agreements.

Resource Conservation and Recovery Act (RCRA)

The RCRA corrective action program focuses on more than 3,500 active industrial facilities across the country that treat, store, or generate hazardous waste. The most serious pollution problems at RCRA-regulated facilities occur when releases migrate off-site, contaminating public and private drinking water supplies or endangering wetlands and other sensitive ecosystems. EPA and its State partners have worked together on developing baselines and appropriate measures to track performance and to identify high-priority facilities requiring corrective action. The EPA program seeks to ensure that sites are maintained in a manner that poses no risk to human health or to the environment.

RCRA CLEAN-UP REFORMS

In FY 1999, EPA announced the RCRA Clean-up Reforms, focusing on reducing impediments to achieving the Agency's RCRA clean-up objective, enhancing partner and stakeholder involvement, and promoting innovative approaches to clean-up action. A centerpiece of the reforms is the recently promulgated Hazardous Waste Identification Rule (HWIR)-media regulation and the post-closure rule. The HWIR-media rule created a new RCRA permit for managing wastes from cleanup. The new permit will not require facility-wide corrective action that previously slowed clean-up progress at other sites.

In FY 1999, EPA's corrective action program documented that human exposure to toxins is under control at an additional 162 of the 1,712 high-priority facilities and that migration of contaminated groundwater is under control at an additional 188 facilities, exceeding the FY 1999 goal (APG 31). Over the life of the RCRA program, EPA and its State partners have documented that human exposures have been controlled at 477 facilities and that migration of contaminated groundwater has been controlled at 440 facilities.

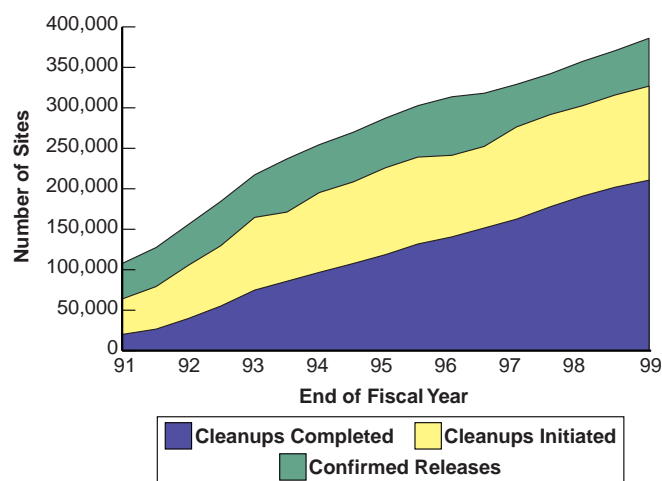
Leaking Underground Storage Tank Cleanups

Tasked with ensuring rapid and effective responses to underground petroleum storage tank releases, *EPA's Leaking Underground Storage Tank (LUST) Program worked with States, Tribes, and the regulated community to complete 25,678 cleanups in FY 1999, well in excess of the year's target of 22,000 cleanups (APG 32).*

At the beginning of FY 1999, a backlog of 168,000 LUST cleanups had yet to be completed. To address this backlog, as well as 26,434 additional confirmed releases, EPA worked with States, Tribes, and the regulated community on several initiatives, including implementing a risk-based decision-making approach to prioritizing corrective action at LUST sites. EPA also helped States develop Pay-for-Performance clean-up programs, in which contractors are paid based on actual contamination reduc-

National LUST Corrective Action Activity

(Cumulative Number of Corrective Actions FY 1991-FY 1999)



tions at sites. In FY 1999, EPA supported 14 out of 21 States that expressed an interest in starting Pay-for-Performance programs.

Brownfields

EPA promotes the assessment, cleanup, and sustainable reuse of abandoned or underutilized industrial and commercial properties, which contain or are perceived to contain environmental contamination. These properties, commonly known as Brownfields, exist in a significant number of communities throughout the nation. EPA's Brownfields program relies on local community involvement and strong stakeholder partnerships.

In FY 1999, EPA continued its commitment to Brownfields redevelopment by providing funding and technical support to 80 communities through its Brownfields Assessment Demonstration Pilot program, for a cumulative total of 307 communities. As a result of this progress, the Agency exceeded its FY 1999 goal of funding 300 projects by the end of 1999 (APG 33). The Brownfields Assessment Demonstration Pilots, each funded at up to \$200,000 over two years, will test redevelopment models, evaluate ways to remove regulatory barriers without sacrificing protectiveness, and facilitate coordinated site assessment, environmental cleanup, and redevelopment efforts at the Federal, State, and local levels.

Also in FY 1999, EPA awarded 45 Brownfields Cleanup Revolving Loan Fund (BCRLF) pilots. The pilots, each funded at up to \$500,000, will enable

eligible States, cities, towns, counties, and Tribes to capitalize on revolving loan funds to safely clean up and sustainably reuse Brownfields. This support enables communities that have completed their Brownfields Assessment Demonstration Pilot activities or have performed a targeted Brownfields assessment to make loans to prospective purchasers of Brownfields properties.

As a result of the Assessment Pilots and Revolving Loan Fund programs, EPA and its partners have completed 1,687 property assessments and 116 property cleanups and have initiated redevelopment activities at 151 Brownfields properties. These efforts have created over 4,416 clean-up and redevelopment jobs.

ATTRACTING BIG BUSINESS LEADS TO POSITIVE RESULTS FOR EMERYVILLE

Prosperity is gradually replacing blight in Emeryville, California. Two hundred units of mixed-income housing will be constructed on a four-acre Brownfield site, considerably lessening a housing shortage for the community. The city has attracted several developers to construct regional retail, hotel, and office developments that will create 2,500 jobs in the next five years. In addition, the second largest biotechnology firm in the country will construct 12 new company buildings over the span of 20 years, eventually creating over 3,000 high-paying jobs. With these successes, Emeryville is on its way to being a home to vibrant industry again.

Research Contributions

One obstacle to addressing waste sites effectively is that the demand for treatment often exceeds the capabilities of existing technologies. The Superfund Innovative Technology Evaluation (SITE) Program was created to meet the increased demand for alternative remediation and characterization technologies. SITE encourages the commercialization of innovative technologies by providing potential users with high-quality performance and cost data. *In FY 1999, work under the program proceeded according to schedule to meet its 2001 target, as EPA*

completed demonstrations of seven innovative technologies through partnerships with the private sector and other government agencies (APG 34).

IMPROVING TECHNOLOGY FOR SITE CLEANUP

Research has produced improved techniques for contaminated site characterization, risk assessment, and remediation that result in cheaper, faster cleanups and more effective risk reduction. An extensive field study on the application of permeable reactive barriers for solvents treatment in groundwater demonstrated faster, cheaper cleanups, while two field tests successfully removed a frequent and very problematic source of groundwater pollution: solvent contamination by dense non-aqueous phase liquids. These research projects also have contributed to technology transfer products for EPA, States, the private sector, and others.

Effective Risk Prevention Through Safe Waste Management

By 2005, EPA has committed that 282,000 facilities will be managed according to the practices that prevent releases to the environment, and EPA and its partners will have the capabilities to successfully respond to all known emergencies to reduce the risk to human health and the environment.

Resource Conservation and Recovery Act (RCRA)

The RCRA permitting program establishes a “cradle-to-grave” framework that identifies a set of controls that facilities should have in place to ensure the safe management of hazardous waste. *While complete data are not available to report on progress, the Agency and the States did make progress in FY 1999 toward the Agency’s goal of ensuring that 122 additional facilities have approved controls in place (APG 35).* Examples of approved controls include operating permits, verified clean closures, and post-closure permits. The Agency and its partners devoted a significant effort during the year to improving RCRA data reporting and collection. The Agency will address remaining problems in FY 2000 and will have data available for FYs 1999 and 2000 in the FY 2000 Annual Performance Report.

To control air emissions of certain pollutants covered under RCRA, the Agency promulgated the hazardous waste combustion Maximum Achievable Control Technology (MACT) rule in FY 1999. The regulation is designed to control emissions of dioxins, furans, and particulate matter at combustion facilities. EPA developed an innovative permitting approach that provides States with flexibility to implement the administrative portions of the rule in the way that best meets their needs.

Oil Storage Facilities and Oil Spill Prevention

To address the more than 20,000 oil spills that are reported to the Federal government each year, EPA’s Oil Spill Program works to ensure compliance with the Spill Prevention, Control, and Countermeasures (SPCC) requirements. *In FY 1999, 774 additional oil storage facilities became compliant with the SPCC requirements, meaning that EPA significantly exceeded its goal of bringing 190 facilities into compliance (APG 36).*

Underground Storage Tanks

The primary FY 1999 focus for the Underground Storage Tank (UST) Program was to help ensure that all UST owners and operators complied with EPA and State requirements for leak detection and the 1998 deadline for upgrading, replacing, or closure of substandard tanks. In complying with these rules, owners identified a total of 26,434 UST releases in FY 1999. By the end of FY 1999, EPA and State programs had ensured that over 646,000 USTs (approximately 85 percent of the universe) were in compliance with the 1998 requirements. Additionally, owners and operators permanently closed over 130,000 substandard USTs in FY 1999, bringing to almost 1.4 million the total number of substandard tanks closed.

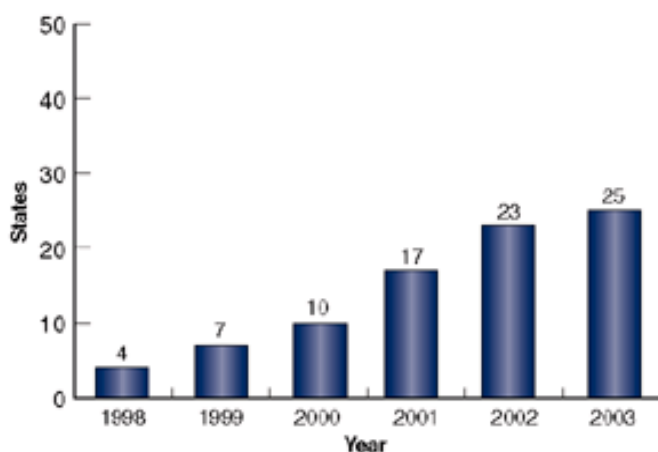
Another important component of EPA’s UST program is empowering States to run their own programs. By the end of FY 1999, EPA had approved UST programs in 27 States and in the District of Columbia and Puerto Rico.

National Preparedness

Industrial accidents and other disasters involving toxic chemicals and other hazardous substances are a constant threat to human health and the environ-

ment. In FY 1999, EPA implemented the Risk Management Plan (RMP) program, which requires industrial facilities to submit plans detailing contingencies and emergency response procedures, hazardous substance inventories, and disaster response scenarios. In FY 1999, facilities submitted 14,405 plans. By the end of FY 1999, EPA delegated authority to seven States for managing their own RMP programs. The graph shows the cumulative number of States that have implemented the RMP program through FY 1999 and those States expected to implement the program over the next four years.

States Implementing the RMP Program



Radiation Waste Management

EPA's Radiation Protection Division participates in developing environmental protection procedures for Federal facilities and also oversees their implementation. For example, EPA has an oversight role with regard to the Department of Energy's (DOE) waste disposal activities at the Waste Isolation Pilot Plant (WIPP) facility, the nation's first deep underground facility for radioactive waste disposal. WIPP opened and began accepting waste in FY 1999. By the end of the fiscal year, approximately 500 drums of radioactive waste were removed from the accessible environment and permanently disposed of at the plant. While not directly involved in handling the waste, EPA reviewed and evaluated DOE reports, conducted audits at the waste generator sites before allowing waste shipments, and completed inspections at the WIPP.

Research Contributions

Through the development of new and improved methods and models, the Agency's research provides the fundamental science and modeling needed to conduct state-of-the-art exposure modeling and risk assessment of hazardous materials and other environmental threats. *In FY 1999, EPA met its research commitment to complete a test version of a cumulative exposure model that integrates the environmental impact of multiple chemicals through multiple media and pathways (APG 37).* This research supports regulatory reform efforts under the Hazardous Waste Identification Rule (HWIR), which sets safe exit levels below which a waste or waste stream is excluded from regulation as a hazardous waste.

PROGRAM EVALUATION

EPA and other organizations have recently conducted various evaluations relevant to the Agency's waste management and clean-up programs. Summaries of two of these evaluations follow.

Superfund Innovative Technology Evaluation (SITE) Program

The most recent analysis of 71 Superfund Records of Decision (dated 1993 to 1997) showed that the Agency realized an estimated 70 percent average cost savings per site when the Superfund program employed innovative technologies tested in the SITE program rather than conventional remediation technologies. The program evaluation calculated a total cost savings of \$2.1 billion dollars associated with usage of the SITE technologies.

Oil Spill Program

In FY 1999, EPA conducted a national review of its Oil Spill Program to identify the program's most effective components and share the most promising innovations underway. The review highlighted an innovative enforcement approach, the Spill Prevention Control Counter Measure Expedited Enforcement Program, which was designed to identify and correct low-level spills within an expedited time frame of 30 to 60 days. The program review found that a demonstration pilot of this approach yielded a significant increase in both

enforcement and compliance. EPA is now considering this approach for national implementation efforts in FYs 2000 and 2001.

CONCLUSIONS AND CHALLENGES

EPA has made significant progress in meeting its FY 1999 performance goals for waste management programs. Agency research in support of safe waste management continues to develop cost-effective and innovative technologies and scientifically sound approaches for site cleanup. By working efficiently with States, Tribes, and other partners to make the most of Agency resources, EPA is confident about success in achieving its long-term goals.

Site Cleanup, Management, and Enforcement

Superfund will continue its emphasis on reducing risks to human health through completing construction at Superfund sites, including those at Federal facilities. This includes reliance on the “enforcement first” policy of ensuring cleanup by responsible parties through the successful implementation of recent administrative reforms. The participation of potentially responsible parties, especially for new construction starts at non-Federal NPL sites, will be encouraged, and cost recovery will continue to be emphasized.

Implementation of corrective action at RCRA hazardous waste management facilities will remain one of EPA’s highest priorities. The corrective action program will focus on controlling human exposure to toxins and groundwater releases at the 1,712 high priority facilities jointly identified by EPA Regions and State counterparts. EPA will work with States and Tribes to implement the RCRA Clean-up Reforms. Attention will be given to attaining the maximum use of program flexibility and practical approaches through comprehensive training, outreach, application of new enforcement tools, and enhancing community involvement through greater public access to information.

The LUST program will continue to support State efforts to make cleanups better, cheaper, and faster. EPA will promote risk-based decision-making (RBDM) in State and Tribal UST programs by developing ways to measure the performance of RBDM and by helping to resolve regional barriers to

RBDM development. In addition, the LUST program will continue to support corrective action information exchanges, assist state enforcement efforts to promote cleanups, develop policy guidance and technical manuals, and sponsor workshops and training events. Of special concern to the program are emerging issues surrounding methyl tertiary butyl ether and other fuel oxygenates, such as the potential need to reassess previously cleaned sites for additional testing and remediation.

Economic Revitalization of Waste Sites

EPA is committed to integrating the concept of economic revitalization into the process of cleaning up contaminated waste sites and other properties. Several initiatives have made significant progress in this arena in a relatively short amount of time. The Brownfields program continues to work with States and local communities to assess, clean up, and reuse former industrial and commercial properties where expansion or redevelopment is complicated by potential environmental contamination, liability, or other concerns. The RCRA corrective action and UST programs will continue to identify instances where redevelopment is complicated by regulatory or programmatic barriers. These programs will work with stakeholders to overcome these barriers through the development of streamlined and innovative approaches to permitting and remediation. Implementation of the Superfund redevelopment initiative will continue by early identification of sites that can be returned to productive reuse once cleanup is completed, issuance of prospective purchaser agreements to allay liability concerns, and work with communities to ensure that these sites are “recycled” back into productive use.

Improving Environmental Data

A significant challenge is the need to develop effective measures to track the relationship between the Agency’s activities and resulting environmental improvements. For waste prevention programs such as RCRA, the challenge is especially difficult because the risk avoided from facility releases prevented as a result of implementing approved RCRA controls cannot be quantified. Remaining data gaps within cumulative exposure modeling and risk assessment also add to the challenge of developing meaningful

performance measures. EPA continues to stress partnerships and practical approaches in making the most of Agency resources to gather this information and work toward other aspects of the Agency's objectives for safe waste management, restoration of contaminated waste sites, and emergency response preparedness.

KEY MILESTONES FOR THE FUTURE

- In FY 2000, EPA will achieve cleanup of over 245,000 cumulative underground storage tank releases.
- In FY 2001, EPA will promulgate the RCRA Standardized Permit Rule and HWIR-Waste Rule.
- In FY 2002, EPA will achieve clean-up construction at a total of 900 Superfund sites and meet the deadline for regulated community compliance with the hazardous waste combustion Maximum Achievable Control Technology (MACT) rule, which was promulgated in 1999.
- In FY 2003, EPA will attain controls to prevent human exposures and groundwater releases at over 50 percent of RCRA corrective action sites.

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Artwork by Allison

GOAL 6: Reducing Global and Cross-Border Risks

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GOAL 6: REDUCTION OF GLOBAL AND CROSS-BORDER ENVIRONMENTAL RISKS

The United States will lead other nations in successful multilateral efforts to reduce significant risks to human health and ecosystems from climate change, stratospheric ozone depletion, and other hazards of international concern.

OVERVIEW

Today, many serious environmental risks transcend political boundaries. As a result, protecting human health and the environment in the United States requires multinational cooperation. For instance, some ecosystems essential to the health and welfare of U.S. citizens, such as the Great Lakes, are shared with neighboring countries and can only be preserved through joint action. Other environmental risks, including those related to climate change and ozone depletion, are global in scope, thus requiring international action in order to protect the health and welfare of U.S. citizens as well as that of the rest of the planet.

In addition to safeguarding human health and the environment, EPA's international programs provide important political and economic benefits. A significant portion of EPA's international work fulfills legally binding treaties, conventions, and other international statutory mandates. The sharing of regulatory and environmental technological expertise helps developing nations as well as the United States and other industrialized nations achieve development consistent with a healthy future for all. Moreover, the implementation of effective environmental management and regulatory approaches throughout the world ensures that U.S. companies are not at a competitive disadvantage in comparison with companies in other nations, which may choose rapid, inexpensive development at the expense of the environment.

FY 1999 PERFORMANCE

To address today's international environmental challenges, EPA established in its Strategic Plan five guiding objectives for work toward this goal over the next five years:

- Protect shared ecosystems through joint action with other nations.
- Reduce greenhouse gas emissions in order to address the risks of climate change.
- Prevent further destruction of the ozone layer and facilitate its recovery.
- Protect human and environmental health from circulating toxic chemicals.
- Build worldwide capacity for environmental protection efforts.

With the help of its international and domestic partners, EPA made progress toward all of these objectives in FY 1999.

Protecting Border Environments

EPA strives to protect the health of citizens who live near borders with other nations by working with those nations to address cross-boundary threats. By 2005, EPA's objective is to reduce transboundary threats to human health and shared ecosystems in North America, including marine and Arctic environments, consistent with bilateral and multilateral treaty obligations in these areas and with the trust responsibility to Tribes.

U.S.-Mexico Border

In recent years, the U.S.-Mexico border region has experienced dramatic increases in industrialization and population growth. This growth has overwhelmed wastewater systems and other environmental infrastructure along both sides of the U.S.-Mexico border and placed additional pressures on the border's natural resources. Building on a 1983 Agreement for the Protection and Improvement of the Environment in the Border Area, EPA is working with other Federal agencies

and Mexican counterparts to address environmental problems and to provide the foundation for long-term sustainable growth. In FY 1999, EPA focused on air quality problems, chemical emergency response, and providing greater numbers of citizens with safe drinking water. To better understand air quality problems, EPA established air emission inventories and monitoring networks. A key indicator of success for this program was the implementation of joint contingency plans for chemical emergencies between sister cities in the United States and Mexico.

Working closely with the Border Environment Cooperation Commission and the North American Development Bank (NADBank), EPA has leveraged \$162 million of appropriated funds into \$602 million worth of environmental infrastructure projects on both sides of the border, benefitting approximately seven million border residents. *In FY 1999, EPA exceeded its goal of one and certified nine projects as eligible for construction and NADBank financing (APG 38).* The significant success of this goal is the result of efforts by parties on both sides of the border to ensure that border residents have adequate water and wastewater treatment facilities. EPA also exceeded its cumulative total as well, and 28 projects have been certified as eligible for construction and NADBank financing. Of these 28 projects, 21 have been funded by NADBank, 16 are under construction, and two have been completed. Through this program, the Mexican city of Juarez, with a population of 1.5 million people, will for the first time have the capacity to treat its wastewater prior to discharging it into the Rio Grande River. Overall, more than six million citizens now have access to safe drinking water as a result of projects completed along the U.S.-Mexico border.

Great Lakes

EPA and its partners have identified 80 comprehensive, basin-wide indicators (<http://www.epa.gov/glnpo/solec/98>) to better assess environmental progress and challenges in the Great Lakes. Representative data are now available for 19 of these indicators. They show that PCB concentrations in top predator fish are either still

slowly decreasing or potentially leveling off at concentrations suspected to cause health problems. In FY 1999, the U.S./Canadian Integrated Atmospheric Deposition Network published information showing that concentrations of some toxic chemicals in the air are decreasing over the past decade but may not disappear completely until the middle of the next century. Also in FY 1999, biological monitoring by EPA's Great Lakes Program and its partners revealed ecosystem impacts attributable to new invasive species. FY 1999 research determined the potential for *Cercopagis*, an invasive zooplankton discovered in Lake Ontario in 1998, to disperse throughout the Great Lakes, harming plankton and fish communities. FY 1999 research also suggests threats to biological communities from invasive round goby fish.

In FY 1999, EPA's Lake Michigan Mass Balance Study, one of the largest and most detailed investigations of its kind, provided State and Federal environmental managers with toxics and nutrient loadings data for different components of the Lake Michigan ecosystem. Managers can now determine the relative pollutant contributions from the atmosphere, lake tributaries, and sediments. This information helps determine the most effective long-term steps for further reducing toxics levels so that Lake Michigan fish will eventually be safe to eat.

EPA's Great Lakes Program identified contaminated sediments as the largest major source of contaminants to the Great Lakes food chain. Contaminated sediments cause impairments to over 2,000 miles (20 percent) of shoreline, including each of the 43 Areas of Concern, and contribute to the fish consumption advisories that remain in place throughout the Great Lakes and many inland lakes. On the U.S. side of the border, sediments have been assessed at 26 Great Lakes locations, and over 1,300,000 cubic yards of contaminated sediments have been remediated over the past three years. Sediment remediation is not yet complete at any U.S. Area of Concern. More information on sediments in the Great Lakes is available at <http://www.epa.gov/glnpo/sediments.html>.

Arctic Environment

High level radioactive contamination is a major threat to human health and ecosystems in the Arctic. Because Northwestern Russia has little infrastructure for handling radioactive waste from decommissioned nuclear submarines, spent nuclear fuel (SNF) from the former Soviet Union has been dumped in the ocean. Today, the accumulation of SNF, stored under unsafe conditions in floating barges and other aging vessels, poses both direct and indirect threats to the environment. The Arctic Military Environmental Cooperation (AMEC) project is a fast-track effort, sponsored in part by EPA, to design and construct a transportable cask for safe interim storage of SNF from Russian nuclear submarines scheduled for dismantlement. In FY 1999, AMEC constructed a cask prototype, which is now being certified for use. By 2005, once the cask has been produced in mass quantity and put into use, it is expected that 25 percent or more of the high-risk uncontained fuel will be safely secured. An estimated 25 percent reduction in the human health and environmental risks associated with the decommissioned sources is expected to result.

Wider Caribbean Marine Environment

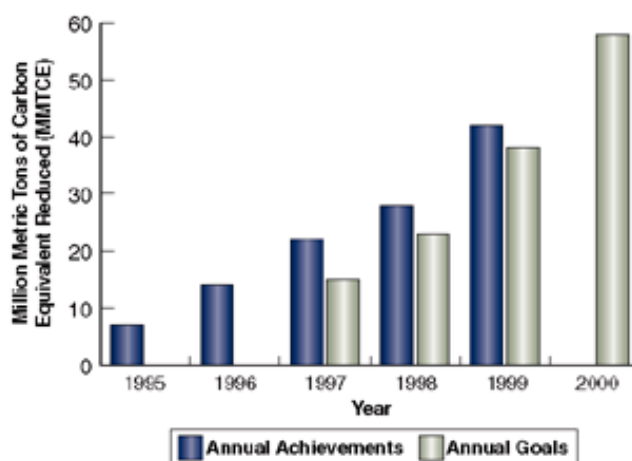
EPA's efforts to protect the marine environment yielded two notable achievements in FY 1999. First, working with the Department of State, NOAA, and other Federal agencies, the Agency completed a regional agreement that establishes common effluent standards for domestic wastewater discharges into the Wider Caribbean (Gulf of Mexico, Caribbean Sea, and Straights of Florida). This agreement represents the first international treaty establishing effluent standards specific to selected pollution sources and the unique sensitivity of various receiving waters. Second, in cooperation with other Federal agencies, EPA proposed draft text for treaty negotiations to phase out the use of tributyltin (TBT) as a marine antifoulant and to establish standards for future action on other marine antifouling systems. The use of TBT for marine antifouling purposes has been documented as the principal source of TBT in coastal and estuarine waters, where the chemical has been shown to cause deformities in shellfish and other benthic organisms.

These two agreements provide the transboundary foundation necessary for addressing current and future sources of marine pollution in coastal waters.

Global Climate Change

EPA works to protect the planet by exploring the ramifications of climate change, including threats and opportunities facing both the nation and the planet. By 2000 and beyond, EPA's objective is to reduce U.S. greenhouse gas emissions to levels consistent with international commitments under the 1992 Framework Convention on Climate Change, building on initial efforts under the Administration's 1993 Climate Change Action Plan.

Goals and Accomplishments of the Climate Change Technology Initiative (CCTI)



The core of EPA's climate change efforts are government/industry partnership programs designed to overcome barriers limiting investments by consumers, businesses, and other organizations in cleaner or more efficient technologies. As documented by numerous studies, energy-efficient technologies provide a sizable opportunity for limiting emissions of greenhouse gases, improving local air quality while simultaneously saving money for both businesses and consumers. EPA's climate change efforts have shown similar results by meeting emission reduction goals and demonstrating cost-effectiveness. *In FY 1999, EPA set a goal for reducing annual greenhouse gas emissions by a total of 35 million metric tons in carbon equivalent (MMTCE) through partnerships with businesses, schools, State and local governments, and other*

organizations (APG 39). While final data covering all of FY 1999 will not be available until Spring 2000, current estimates indicate that EPA may exceed this goal by about 15 percent.

Cars, trucks, aircraft, and other components of the nation's transportation system emit about one third of total U.S. greenhouse gas emissions. Greenhouse gas emissions associated with transportation are growing rapidly as Americans drive more and as the popularity of less efficient sport-utility and other larger vehicles continues to increase. To address emissions from automobiles, EPA has partnered with other agencies and domestic auto manufacturers in the "Partnership for a New Generation of Vehicles" (PNGV). PNGV is an effort to develop attractive, affordable cars that meet all applicable safety and environmental standards and achieve up to three times the fuel efficiency of today's cars. The program aims to produce a prototype mid-sized family car capable of 80 miles per gallon with a two-thirds reduction in carbon emissions by 2004. In FY 1999, EPA's PNGV work reached a milestone by demonstrating technology for a mid-size family sedan that achieves 61 miles per gallon, has low emissions, and is safe, practical, and affordable. EPA expects progress on development of the technology to accelerate over the next several years because much of the work to date has focused on program design and start up.

Research Contributions

EPA participates in a multi-agency effort known as the Global Change Research Program (GCRP) to evaluate the potential consequences of global change. The long-term goal of the GCRP is to understand and articulate, in terms that are meaningful for decision-makers and other stakeholders, the potential consequences of global environmental change for human health and ecosystems in the United States. The global environmental changes covered by this research program include climate change and variability, ultraviolet radiation, and human dimensions of global change, such as land-use change.

EPA is also committed to fulfilling its obligations as a participant in the interagency U.S.

Global Change Research Program (USGCRP). As part of this effort, EPA is contributing to the First USGCRP National Assessment of the "Potential Consequences of Climate Variability and Change for the United States," which includes 19 regional assessments and six sectoral assessments. EPA is responsible for one sectoral and three regional assessments. These assessments focus on evaluating the impacts of global change on human health, ecosystems, and economic systems at regional, State, and local scales. The assessment process is dedicated to meeting the information needs of stakeholders by providing the best scientific information in a form that is useful, understandable, and timely. The assessments also examine possible adaptation opportunities in order to reduce the risks, or take advantage of the opportunities, presented by climate variability and change. ***EPA completed the Mid-Atlantic and Great Lakes regional assessments as well as the Human Health sectoral assessment on schedule in FY 1999, but the Gulf Coast regional assessment is behind schedule due to difficulties obtaining a high-quality project proposal able to pass rigorous scientific peer review (APG 40).*** A university proposal has been accepted, and the Gulf Coast Assessment is underway. The delay has not impacted EPA's contribution to the USGCRP National Synthesis Report.

Other global change research focused on ultra violet (UV) monitoring. ***In FY 1999, EPA made additional monitoring progress by completing installation of all 21 UV monitoring sites. To learn more about the extent of the UV radiation problem, EPA established the UV monitoring network, which includes 14 sites in National Park Service areas throughout the continental United States (and the Virgin Islands and Hawaii) as well as seven sites in urban areas (APG 51).***

Restoring the Ozone Layer

EPA helps protect citizens from the dangers of a depleted ozone layer by reducing ozone-depleting substances and educating citizens about healthy sun practices. EPA's objective is that by 2005, ozone concentrations in the stratosphere will have stopped declining and begun the process of recovery.

The stratospheric ozone layer protects life on earth from harmful UV radiation. Scientific evidence amassed over the past 25 years indicates that the use of chlorofluorocarbons (CFCs) and other halogenated chemicals has caused destruction of the stratospheric ozone layer. In FY 1999, EPA actions, including the phase-out of domestic production of ozone-depleting substances (ODS), furthered the nation's commitment to halting the destruction of the ozone layer. *Based on results in the first three quarters of FY 1999, EPA was on track to meet its goal of ensuring that domestic consumption of class II hydro chlorofluorocarbons (HCFCs) was restricted to below 208,400 metric tonnes, and domestic exempted production and import of newly produced class I CFCs and halons were restricted to below 130,000 metric tonnes. (APG 41).* Calculations for the total data in FY 1999 will be available in Spring 2000.

FACILITATING OZONE-DEPLETING SUBSTANCES (ODS) PHASE-OUT IN DEVELOPING COUNTRIES

Parties to the Montreal Protocol established a Multilateral Fund to provide aid to developing countries for ODS phase-out programs. In FY 1999, the United States contributed a total of \$45.8 million to the Multilateral Fund, \$11.3 million of which came from EPA funding. The U.S. contributions funded phase-out programs in more than 50 countries. The focus of the Fund in FY 1999 was to shut down existing CFC production facilities in developing countries and to reduce illegal trade in ozone-depleting substances.

A particular focus of attention in FY 1999 was the ODS methyl bromide. The first step of the phase-out schedule for methyl bromide, in accordance with the Montreal Protocol, is a 25 percent reduction in the production and consumption of methyl bromide from the 1991 baseline in FY 1999 and maintaining that level through FY 2000. The 25 percent reduction was achieved in FY 1999, and proposed regulations for additional phase-down steps in 2001, 2003, and 2005 are expected in early 2000. As a fumigant for quarantine and pre-shipment treatment of

vegetables, fruits, and other commodities, methyl bromide provides an important level of protection against the invasion of foreign pests and diseases. Since this protection is increasingly important in a period of expanding international trade, EPA, USDA, and other government agencies are actively researching alternatives to methyl bromide.

Even after these and other program goals are met, the long lifetime and stability of ODSs means that the public will continue to face higher levels of radiation than existed prior to the depletion of the ozone layer. In fact, according to current atmospheric research, the ozone layer will not recover until the mid-21st century. During FY 1999, EPA initiated the SunWise Program to promote behavioral changes with a goal of protecting children from skin cancer, cataracts, and other long-term UV-related health effects. The SunWise program expanded from 25 schools in 12 States to over 140 schools in 36 States, reaching approximately 10,000 students.

Circulating Chemicals

EPA strives to protect citizens and ecosystems from chemical dangers in the air, water, and soil that often originate in faraway places yet pose a threat to the United States. EPA's objective is to reduce the risks to U.S. human health and ecosystems from selected toxics (including pesticides) that circulate in the environment at global and regional scales. EPA's aim is to meet this goal by 2005 in a manner consistent with international obligations (from various treaties and agreements, both current and nearing completion), the need to level up public health environmental standards, and to expand toxics release reporting.

EPA's FY 1999 actions to protect U.S. human health and ecosystems from circulating toxics addressed priority chemical groups and individual chemicals, like mercury, as well as issues significant to chemical risks in general, such as the availability of effects data.

Persistent organic pollutants (POPs) are toxic, degrade very slowly, and accumulate in the tissue of humans and other organisms. POPs also disperse easily in the atmosphere, often traveling long

distances. *In FY 1999, EPA obtained substantial international agreement on criteria for selecting chemicals for a new global POPs convention; however, no agreement has yet been reached on capacity-building to support the treaty's implementation (APG 42).* Capacity-building, as it relates to funding and technical assistance commitments for developing countries, is likely to provide one of the toughest challenges for the treaty negotiations at the March and December 2000 sessions. EPA would have preferred to fully conclude negotiations on these two matters in FY 1999, but the treaty will be a success so long as they are resolved no later than the final negotiating session in December 2000. Once implemented, the global treaty is expected to eliminate or reduce the worldwide production of 12 hazardous chemicals and define the scientific criteria for selecting additional POPs to be addressed under the convention.

In FY 1999, EPA continued to participate in efforts to complete the much-needed testing of high production volume (HPV) chemicals and the dissemination of HPV chemical effects data. HPV chemicals are industrial chemicals that are produced in or imported to the United States in quantities over one million pounds per year and for which basic toxicity information is limited or unavailable. EPA is helping to complete the necessary testing through its domestic HPV Challenge program and through the Organization for Economic Cooperation and Development's (OECD's) Screening Information Data Sets program. In FYs 1998 and 1999, EPA participated in OECD decision meetings that completed the assessment of over 60 HPV chemicals. Such efforts represent important progress toward the objective of ensuring that basic test data are available for the majority of HPV chemicals by 2005.

The 1992 United Nations Conference on Environment and Development endorsed the development of a globally harmonized system of chemical hazard classification and labeling by the end of 2000. Harmonization facilitates international trade by reducing the burden on chemical companies, which must often perform separate, sometimes only slightly different tests to comply

with various national standards. A harmonized classification and labeling system improves safety and environmental protection by standardizing the toxicity information available on a chemical. In FY 1999, the OECD, working with EPA and its international counterparts, achieved consensus on classification criteria for eight health and environmental endpoints.

The Agency's 1997 Mercury Study Report to Congress provides a baseline for domestic emissions of mercury, as well as emission reductions expected from the promulgation of Maximum Achievable Control Technology (MACT) standards for different industrial sectors. Few other countries have adequate inventories of their own mercury emissions, however, and while EPA is able to estimate the percentage of domestic mercury deposition resulting from the influx of foreign mercury emissions, the Agency currently cannot specify with precision which countries or regions account for this influx. In FY 1999, EPA established monitoring systems at three sites (Ohio River Valley; Barrow, Alaska; and the Florida Everglades) to track long-range transboundary transport of mercury into the United States and will conduct modeling to identify and assess international sources and pathways of mercury transport.

Working with its international partners, EPA has met its goal to reduce global usage of leaded gasoline to below 1993 levels, thus lessening the risk that lead poisoning poses to children's neurological development. Research conducted in FY 1999 shows a reduction of leaded gasoline usage worldwide from 249 million metric tons (out of a total of 745 million metric tons) in 1993 to 166 million metric tons (out of a total of 805 million metric tons) in 1997. Unleaded gasoline currently accounts for 78 percent of all gasoline sold worldwide, and this figure is expected to increase to over 84 percent by 2003. To support the development of international lead phase-out plans, EPA recently completed its Implementer's Guide to Phase-Out Lead in Gasoline. EPA also is planning workshops to aid 25 countries that are experiencing technical difficulties meeting their phase-out commitments.

Cleaner and Cheaper Practices

EPA works to protect the global environment by helping other nations develop environmental standards and methods and by protecting the right of all nations to engage in environmentally sound trade practices. By 2005, EPA's objective is to increase the application of cleaner and more cost-effective environmental practices and technologies in the United States and abroad through international cooperation.

In FY 1999, EPA carried out a number of important activities that contribute toward achievement of the objective:

- *Delivered 16 (of 30 planned) international training modules in eight countries. The remaining 14 modules were not completed due to host country difficulties (i.e., political and economic unrest, U.S. government sanctions, and inability to provide resource share).*
- *Implemented six technology assistance and dissemination projects, including development of three new electronic Technical Information Packages (TIPs) covering the areas of solid waste, hazardous waste, and air quality management.*
- *Implemented six (of a projected five) cooperative policy development projects, including securing 15 new partners to join as members of the International Cooperative for Cleaner Production and designing member regional sites for the Asia-Pacific Roundtable for Cleaner Production and the Cleaner Production Roundtable of the Americas; and developing and delivering "Environmental Information On-Line: A Guide for International Users" to key partners overseas.*
- *Disseminated information products on U.S. environmental technologies and techniques to 2,500 foreign customers, including 1,500 international visitors representing over 110 countries, and thousands of other foreign parties through an Agency website and other means (APG 43).*

EPA made substantial progress during FY 1999 in strengthening technical, administrative, and other frameworks in support of "cleaner, cheaper" environmental protection in targeted countries and regions.

Partner countries have used the materials and skills gained through these exchanges to enact or strengthen environmental laws, regulations, and standards; develop monitoring and enforcement capabilities; and implement environmental protection programs both domestically and internationally. By exchanging information and sharing costs of environmental research and regulation, EPA's international policy also helped to strengthen environmental protection programs in the United States.

GERMAN ENVIRONMENTALISTS PARTNER WITH BALTIMORE, MARYLAND

Urban environmental practitioners from Germany met with their counterparts from Baltimore to collaborate, as part of a two-year transatlantic environmental exchange program, on Brownfield revitalization, smart growth, and urban ecological issues. As a result, the group presented a series of recommendations to the Office of the Mayor and the City Transportation Director in Baltimore, which included improved public transportation shelters with maps and time charts, a new bike path linking the Frederick Olmstead Park system, and suggestions for a pedestrian zone adjacent to the Inner Harbor.

One example of a successful program with partner countries was EPA's international initiative on "Microbiologically Safe Drinking Water for Children's Health," launched in FY 1999. Using El Salvador, Nicaragua, and Honduras as pilot countries for Central American implementation, EPA evaluated needs and developed joint action plans for source water protection, enhancement of laboratory capabilities, and treatment plant optimization. EPA also launched a cooperative program with China, focusing on air pollution, climate change, and public health.

In FY 1999, EPA also made progress in developing and implementing international agreements on programs that integrate international trade, investment, and environmental policies to harmonize environmental standards with major trading partners. The North American Free Trade

Agreement (NAFTA) is the most significant piece of trade legislation thus far that stresses the establishment and maintenance of high environmental standards. In FY 1999, EPA accomplished its goals for management of two areas of the North American Commission for Environmental Cooperation (CEC), a NAFTA side-agreement. First, the North American Regional Action Plan (NARAP) for mercury was developed and approved. In addition, a more comprehensive action plan on mercury (Phase 2) was drafted in August 1999 and is currently under public review for completion by April 2000. Also in FY 1999, the CEC issued *Taking Stock, 1996 Trilateral Pollutant Release Transfer Registry*. This registry gives citizens in the United States, Mexico, and Canada access to information about pollutant releases and transfers at a North American scale, creating an informational basis for tri-national cooperation to further reduce North American pollution.

PROGRAM EVALUATION

EPA laid the groundwork during FY 1999 for substantially improving the way it designs, implements, and measures the effectiveness of international capacity-building programs. A cross-Agency task force carried out an assessment that (1) reviewed ongoing international capacity-building programs within the Agency; (2) established a set of best practice guidelines related to program development and implementation, including a checklist of criteria for evaluating Agency engagement and guidelines related to project selection, design, implementation, monitoring, and evaluation; (3) developed a hierarchy for establishing performance goals under GPRA; and (4) developed a generic set of environmental and programmatic indicators for use by EPA program managers in establishing annual performance goals and measures under GPRA. EPA's international capacity-building annual performance goals and measures for FY 2001 reflect this work.

CONCLUSIONS AND CHALLENGES

EPA has long been recognized worldwide as a leading source of environmental regulatory and management expertise. The Agency has made much

progress in efforts to advance protection of the global commons. Numerous treaties, binding conventions, and other partnerships are now underway and helping to advance sustainable environmental growth across the world. Continued progress will rely greatly on the ability to achieve agreement on key global negotiations and on the ability to sustain financial and political support for this work.

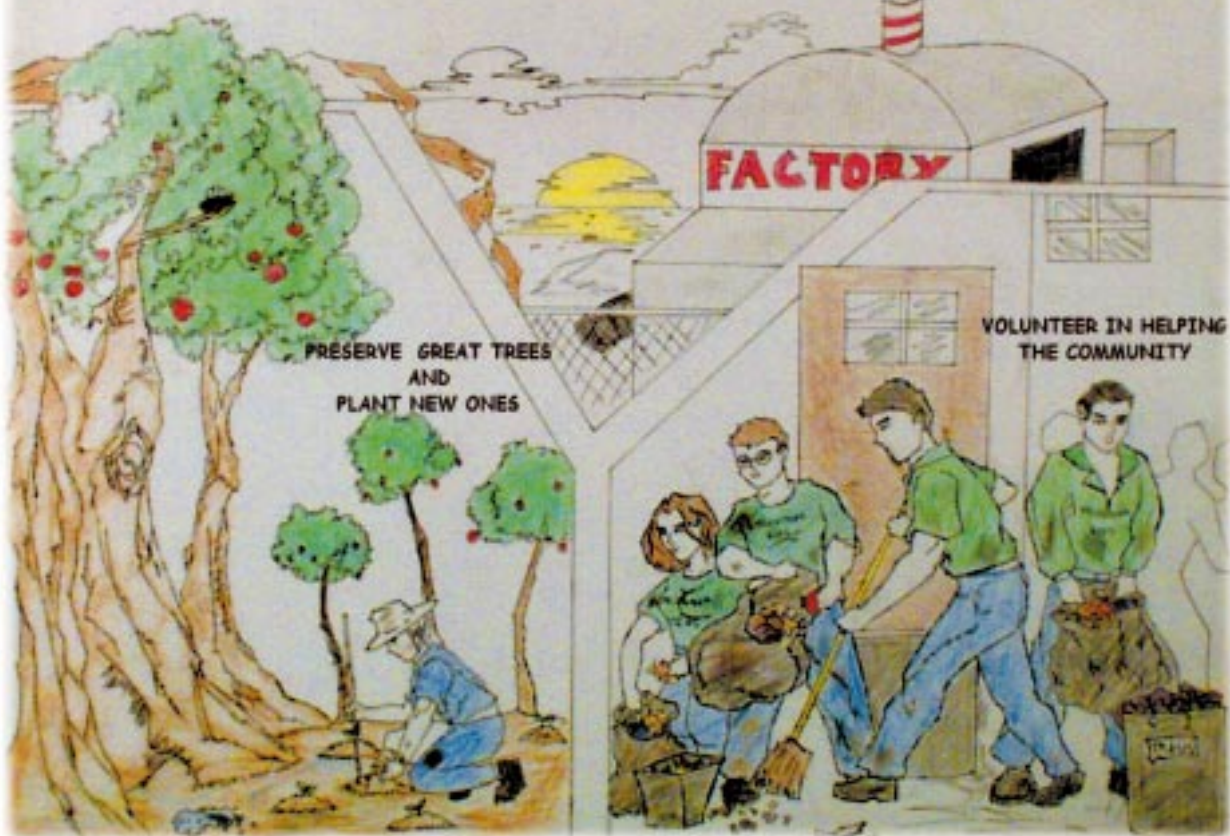
Despite the significant accomplishments of EPA's programs to date, there remain considerable opportunities and significant challenges to future efforts. For example, cooperation with other countries, to ensure that businesses are responsible actors and all people are protected as trade is liberalized, is an essential and difficult process. On the Mexico border, jointly addressing common issues between agencies in the two nations has been a major challenge, especially as Mexican States and local governments in the border region generally have not had the authority or resources to address border issues. In the area of climate change, further pollution reductions and savings from energy efficiency programs and greater use of cost-effective renewable energy are possible. Technologies are being developed and already available that can cut energy use significantly.

KEY MILESTONES FOR THE FUTURE

EPA has set a number of key milestones for the future in the international arena. Some of these major milestones are in the areas of the Mexico border and climate change.

- By 2005, an additional 1.5 million residents along the U.S.-Mexico Border, including Tribes, will be served by adequate drinking water and wastewater treatment systems.
- Within the domain of climate change, EPA established a goal to reduce greenhouse gases by 98 mmtce by 2005. Key milestones for this goal include reducing greenhouse gas emissions by more than 60 MMTCE in 2001, by more than 68 MMTCE in 2002, by more than 76 MMTCE in 2003, and by more than 85 MMTCE in 2005.

STOP TOXIC WASTE DUMPING ON THE SEA AND REDUCE AIR POLLUTION



GOAL 7: Right-to-Know

Artwork by Crystal

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GOAL 7: EXPANSION OF AMERICANS' RIGHT-TO-KNOW ABOUT THEIR ENVIRONMENT

Easy access to a wealth of information about the state of their local environment will expand citizen involvement and give people tools to protect their families and their communities as they see fit. Increased information exchange between scientists, public health officials, businesses, citizens, and all levels of government will foster greater knowledge about the environment and what can be done to protect it.

OVERVIEW

EPA's Right-to-Know goal reflects the Agency's commitment to provide information that will help protect human health and safeguard the natural environment. All Americans have a right to know about the safety of the air they breathe, the water they drink, and the food they eat. Access to current, accurate, and understandable information enhances the public's ability to participate in environmental decision-making, helps the public to reduce its exposure to harmful pollutants, and increases the ability of EPA's partners—Federal, State, Tribal, and local—to address environmental problems. EPA's commitment to environmental equity necessitates the availability of information for minority, low-income communities whose residents suffer disproportionately from poor environmental conditions.

In addition to making progress toward the goal, EPA environmental information activities in FY 1999 contributed to a number of cross-Agency priorities, including children's health, environmental justice, addressing persistent bioaccumulative toxics (PBTs), and broad-based sector work. Recognizing the important role that the achievement of this goal plays in effective environmental management, EPA created a new Office of Environmental Information in FY 1999. The new organization will help the Agency collect, manage, and disseminate data and information more efficiently; respond to public information needs more effectively; and use environmental information as a strategic resource.

In its Strategic Plan, EPA established three objectives that contribute to the expansion of Americans' Right-to-Know: empower the public with environmental information that helps them participate in environmental protection efforts;

assist the public in reducing exposure to environmental and human health risks by providing information on specific pollutants; and enhance the ability of EPA's partners to address environmental problems by providing better, more complete environmental information.

FY 1999 PERFORMANCE

Empowering the Public with Environmental Information

By 2005, EPA will improve the ability of the American public to participate in the protection of human health and the environment by increasing the quality and quantity of general environmental education and outreach and data availability programs, especially in disproportionately impacted and disadvantaged communities.

Recent advances in technology have created opportunities for collecting, managing, and disseminating information. Together, EPA and the States harness the latest technologies to exchange and integrate environmental information more efficiently than ever before. At the same time, EPA reaches out to individuals through its Website and the National Telephone Survey to identify and respond to public information needs more effectively.

EPA programs and the States often collect and manage data using different standards, formats, and protocols. This lack of coordination complicates information integration and consolidation and limits the ability of the public to gather facility- and area-specific information. Through establishment of the State/EPA Information Management Workgroup, EPA and the States have committed to share environmental information based on compatible data standards and to develop and implement joint

environmental data standards. The Workgroup has completed work on the data standards for facility identification and date designation. Work currently is proceeding on standards for latitude/longitude, industrial classification, chemical identity, and biological taxonomy. EPA plans to implement these six data standards in 13 major databases by the end of FY 2003.

The One Stop Reporting Program encourages State-to-State collaboration in addressing environmental information issues and needs. One Stop grants are awarded to State environmental agencies that are on the leading edge of environmental information management reform. The Program focuses on streamlining reporting by regulated entities and ultimately improving the availability of environmental performance data to the public. *The Agency did not meet its FY 1999 goal of adding eight States to the roster of those participating in the One Stop Reporting Program (four States were added) primarily because States had not demonstrated the required level of information integration (APG 44).* EPA has added a technology transfer activity to help additional States meet the One Stop Reporting eligibility criteria. The 25 States now participating in the program are implementing major environmental management systems that will provide better integrated, more accessible information.

FY 1999's four new One Stop Program participants—California, Michigan, Nebraska, and Virginia—used the EPA grants to further develop integrated environmental information systems. Also in FY 1999, EPA brought several States together to develop a common Facility Identification Template for States (FITS), and 35 States now plan information systems incorporating this new data standard (http://www.sso.org/ecos/projects/EIM/fits_2.htm). The availability of FITS has already cut State costs by an average of \$300,000 per data model. When fully implemented, the new One Stop information systems will enhance decision-making at the State and local levels, increase public access to information, and help reduce State and industry reporting burdens.

The Environmental Justice Grants Program includes the Environmental Justice Small Grants Program and the State and Tribal Environmental

Justice Grants Program. *EPA met its targeted FY 1999 goal by awarding 100 environmental justice grants (APG 45)* to eligible community groups, enhancing their ability to address pressing environmental problems (see related sidebar). The grants also supported State and Tribal efforts to develop the capacity needed to address a broad range of environmental justice issues.

THE COALITION TO END LEAD POISONING, INC. GET THE LEAD OUT! ENVIRONMENTAL JUSTICE EMPOWERMENT PROJECT

With the support of a \$20,000 EPA Environmental Justice Grant, the Coalition to End Lead Poisoning, Inc. provides residents of Baltimore, Maryland with information and resources to combat lead poisoning. The Coalition has developed a lead-safe housing registry in Baltimore and conducted numerous training sessions to help families minimize lead exposure. It also provides High Efficiency Particulate Air (HEPA) filtration vacuum cleaners and lead-dust cleaning kits to residents in at-risk communities. The Coalition works in partnership with CLEARCorps—an AmeriCorps program focused on Community Lead Education and Reduction—and continues to receive strong community support.

The Agency met its FY 1999 goals for increasing public access to information via the Internet. The number of Website hits increased by 42 percent. At the same time, EPA increased the number of Internet site pages by 41 percent, and the number of distinct hosts accessing the Website increased by 25 percent—exceeding the 10 percent target for all three performance measures.

EPA established an Agency-wide task force to identify and collect EPA policy, guidance, and interpretive documents that should be made readily available via electronic means. In FY 1999, this effort, the Access to Interpretive Documents Project, identified and converted more than 5,000 paper and 4,000 electronic documents into a consistent electronic format. By the end of FY 2000, EPA intends to make all of its policy, guidance, and interpretive documents available from a central location via the Agency's Website. Achieving this

goal will significantly enhance industry's ability to understand and comply with EPA requirements.

EPA continues to undertake assistance agreements with academic institutions, nonprofit organizations, and minority/low-income communities to further the public's understanding of environmental issues. During FY 1999, EPA awarded over 230 education grants and trained over 8,000 teachers in environmental education. EPA's interagency agreements with other Federal agencies leveraged over \$124,000 in additional support for environmental education activities.

NOXUBEE NATIONAL WILDLIFE REFUGE ENVIRONMENTAL EDUCATION CENTER AND PROGRAM

The Starkville School District in Starkville, Mississippi serves more than 4,000 students across a 100+ square-mile area. With financial support from EPA, and in cooperation with the U.S. Fish and Wildlife Service and Mississippi State University, the school district has established an Environmental Education Center and Program in the Noxubee National Wildlife Refuge. The Program emphasizes the sustainable use of diminishing resources, fish and wildlife ecology, and the historical significance of the region's natural assets. It is one of few such opportunities in this impoverished area of the country, and plans are now underway to expand the program to 69 school districts and to involve the Choctaw Tribal School System, as well as several private schools.

The Index of Watershed Indicators (IWI) represents an important step in integrating environmental information at the watershed level for use by water resource managers, policy makers, and the public in protecting and enhancing the nation's water resources. The IWI reports on 15 environmental indicators used to characterize the condition and vulnerability of aquatic systems in each of the 2,262 watersheds in the 50 States and Puerto Rico (<http://www.epa.gov/iwi>). During FY 1999, EPA met its goal of updating the IWI and released two new versions, which include updates of six indicators and

three new measures. To enhance the utility of the IWI, EPA also developed an IWI data index, a catalog of maps (Watershed Atlas), and new combinations of data layers (e.g., ecological/human health and ecosystem conditions/vulnerabilities).

Providing Information to Reduce Risks to Human Health and the Environment

By 2005, EPA's objective is to improve the ability of the public to reduce exposure to specific environmental and human health risks by making current, accurate substance-specific information widely and easily accessible.

During FY 1999, EPA processed 117,171 Toxic Release Inventory (TRI) chemical release reports from industrial facilities, exceeding its goal to process 110,000 reports, and reduced the time required to make the data available to the public from seven months to five. The Agency also published the annual TRI Data Release Report (APG 46), enabling the public to identify sources of environmental contamination within their communities. The report is available through the TRI homepage (<http://www.epa.gov/opptintr/tri>) and serves as a powerful tool in encouraging facilities to reduce toxic chemical releases.

EPA issued a proposed rule that would require additional reporting in TRI of toxic chemicals that persist in the environment and accumulate in biological organisms (persistent bioaccumulative toxics, or PBTs). The proposed rule would allow communities to obtain information on releases of particularly dangerous substances that may affect human and ecological health. For example, current regulations only require the reporting of mercury—a highly persistent and bioaccumulative toxic—if a facility manufactures or processes more than 25,000 pounds or if it “otherwise uses” more than 10,000 pounds. The proposed rule would lower the reporting threshold for mercury to ten pounds.

EPA initiated the Acute Exposure Guideline Levels (AEGLs) project at the request of Congress following the 1984 release of methyl isocyanate from a chemical plant in Bhopal, India, which killed and injured thousands of plant workers and residents of the surrounding community. During FY 1999, EPA's National Advisory Committee for

Acute Exposure Guideline Levels for Hazardous Substances (NAC/AEGL) reviewed the scientific literature on 28 extremely hazardous substances and developed over 300 individual exposure limits for these substances. These exposure limits help inform chemical manufacturers, workers, and communities of the potential risks to human health should these chemicals be released.

Another important element of the public's right-to-know is the availability of information documenting regulated entities' compliance with environmental regulations. EPA's enforcement presence works to ensure that industrial facilities comply with regulations; provide accurate and timely reports on toxic chemicals they manufacture, process, or release into the environment; and implement plans to respond to chemical accidents. *In FY 1999, EPA conducted 1,034 inspections under the Emergency Planning and Community Right-to-Know Act (EPCRA). The goal of 1,300 inspections was missed because of the reduced number of available Senior Environmental Employment inspectors (APG 47).* To minimize the impact of conducting fewer inspections, Headquarters and the Regions worked to strengthen their targeting of the inspections through enhanced analysis of TRI data and targeting inspections to TRI late/non-responders and responses of questionable quality. *Despite missing the EPCRA inspection goal, EPA exceeded its goal of 200 enforcement actions by bringing 285 actions against facilities that violated the statute (APG 47).*

In addition to providing environmental information directly to its customers, EPA works with States and local communities to help them disseminate important information. The Consumer Confidence Report (CCR) rules require water utilities to provide the public with information on potential sources of local drinking water contaminants, actions taken to address water quality violations, and the steps that vulnerable populations can take to avoid potential microbial contaminants (e.g., *Cryptosporidium*).

EPA achieved its goal of partnering with the States in implementation activities to ensure all water systems are informed of the requirements of the CCR regulation and implementation tools for complying with this rule. Although six States have

elected not to actually sign agreements with EPA on implementation of the CCR regulation, all 50 States are engaged and cooperatively participating in the effort (APG 48). The Agency conducted comprehensive training programs to inform EPA Regional and State drinking water program staff about the CCR regulation. EPA released a series of public service announcements and brochures encouraging consumers to read and understand CCRs (e.g., "Drinking Water and Health: What You Need to Know" and "It's Your Drinking Water: Get to Know It and Protect It"). By October 1999, approximately 56,000 community water systems, serving 92 percent of the U.S. population, were required to publish annual drinking water reports. All of the CCRs issued by large drinking water systems (as of August 31, 1999) are listed on the EPA Website (<http://www.epa.gov/safewater/dwinfo.htm>).

Consumers want to know more about pesticides used on foods and how they can reduce their families' potential exposure to these chemicals. In FY 1999, EPA, working with the U.S. Department of Agriculture and the Food and Drug Administration, published and distributed in both English and Spanish the brochure, "Pesticides and Food." In response to demand, EPA developed a companion Website that builds on information in the printed brochure (<http://www.epa.gov/pesticides/food>). The Agency also released in both English and Spanish the fifth edition of the manual, *Recognition and Management of Pesticide Poisonings*, which provides health care professionals with information on the hazards of pesticides as well as advice on diagnosing and treating poisonings.

Enhancing EPA Partners' Abilities to Address Environmental Problems

By 2005, EPA's objective is to meet or exceed the Agency's customer service standards in providing sound environmental information to Federal, State, local, and Tribal partners to enhance their ability to protect human health and the environment. To coordinate the collection and sharing of environmental data within EPA and with States, other agencies, and the public, EPA created a new Office of Environmental Information. This office will serve as the Agency's focal point for integrating

quality environmental information in ways that inform decisions, improve information management, document performance, and measure success. The new office will work with EPA's many stakeholders and partners to achieve the following:

- Serve as a point of contact for EPA's external partners on information issues and assist them in locating information and services.
- Provide leadership for improving the quality and utility of EPA's data and information, building on Agency successes such as geographic, multimedia, and cross-sectoral approaches.
- Identify current and anticipate future information needs.
- Reduce the burden of collecting information.
- Ensure that the best practical and cost-effective technology is applied to meet EPA's current and future information needs.
- Provide the public with high-quality and useful information on environmental quality, status, and trends.
- Ensure that EPA shares environmental data and information in a consistent, efficient manner that avoids conflicting or confusing messages and promotes understanding.

Another ongoing effort at EPA to enhance the availability of environmental information are the Environmental Monitoring for Public Access and Community Tracking (EMPACT) projects.

During FY 1999, EPA awarded eight grants to local communities for innovative monitoring research pilot projects, exceeding the Agency's goal of five to seven pilot projects for the program (APG 49). These grants encourage local communities to track local environmental conditions and communicate results in a timely manner to the public. During FY 1999, EPA awarded a total of 40 EMPACT grants, including the eight Metro grants. The projects provide much more local environmental data than are generally available from EPA databases. EMPACT projects are described in detail on the EMPACT Website (<http://www.epa.gov/empact>). By 2001, the goal of EMPACT is to assist the 86 largest

metropolitan areas in establishing systems to provide their communities with real-time data on local environmental conditions.

EMPACT METRO PROJECT DENTON-DALLAS/FORT WORTH, TX

With support from an EMPACT Metro grant, the City of Denton has developed a multimedia environmental monitoring system called the Environmental Conditions Online for the Dallas-Fort Worth MetroPLEX (ECOPLEX). ECOPLEX provides environmental information on a multitude of environmental parameters, including UV radiation, ground level ozone, air quality, water quality, and land-use issues. ECOPLEX utilizes innovative and proven environmental monitoring technologies to collect real-time and time-relevant environmental data. The data will inform citizens of the City of Denton, the Elm Fork watershed, and the Dallas/Fort Worth metropolitan area of current, historical, and near-term forecasts of environmental conditions to which the community is exposed. More information can be found at <http://www.ecoplex.unt.edu/>.

PROGRAM EVALUATION

In September 1999, the General Accounting Office (GAO) released a report entitled, *Environmental Protection: EPA is Taking Important Steps to Improve Information Management, but Challenges Remain* (GAO/RCED-99-261). This report discusses EPA's recent information-related initiatives and the major management challenges facing EPA's new Office of Environmental Information. The report recommends that EPA take steps to ensure that its environmental and regulatory data are sufficiently complete, compatible, and accurate.

The EMPACT Program also underwent evaluation in FY 1999. In the *State of the Program Report*, EPA summarized the activities and accomplishments of the program and recommended steps to improve it. Based on the *State of the Program Report*, EMPACT took several actions, including producing an on-line tutorial to help interested parties com-

plete EMPACT grant proposals and applications and instituting a weekly e-mail news and activity update. EMPACT also conducted separate project reviews which compared progress toward specific performance measures. Actions taken as a result of these reviews include the following:

- Establishing a contract to provide information management support to projects.
- Developing technology transfer and risk communication “toolsheds” that will identify and facilitate transfer of successful projects and communication strategies.
- Requiring the tracking of approved Quality Assurance Project Plans and Information Management Plans.

Finally, the *Project Status Report* evaluated the projects in each of the 68 current EMPACT cities. EPA used the report results to guide FY 2000 funding decisions.

CONCLUSIONS AND CHALLENGES

EPA has made significant strides in furthering Americans' Right-to-Know about the environment and in enhancing their ability to protect human health and the environment. Through joint EPA/State information activities, EMPACT and Environmental Justice grants, drinking water CCRs, and efforts to provide better information about toxic chemicals and pesticides, EPA provides communities and individuals with the information and tools they need to address environmental problems. For instance, informal comments received from users of EPA's Website indicate that the site is becoming increasingly useful for individuals in addressing environmental issues in their personal and professional lives.

In addition, the Agency is working to identify measures that better reflect how well its Website and other information products serve the needs of the public. For example, at the end of FY 1999, EPA received the results of a National Performance Review survey of librarian users of the EPA Website. The Agency will consider improvements to its Website based on the results of this survey. EPA is firmly committed to achieving the goal of

strengthening its information resources for purposes of protecting human health and safeguarding the natural environment, both now and in the future.

KEY MILESTONES FOR THE FUTURE

- EPA's newly created Office of Environmental Information will address policies for the quality of lab data, including those raised by a recent Office of Inspector General report. OEI will work through the Agency's Quality and Information Council to ensure full implementation of these policies across the Agency.
- The Administrator has committed to make the One Stop Grant program available to all 50 States by FY 2003. Current projections anticipate adding eight States in FY 2000 and five in FY 2001, bringing the total to 38.
- EPA will establish all data elements and the business rules needed to implement the six Reinventing Environmental Information (REI) standards by the end of FY 2000. EPA, the States, and Tribes will implement the initial six data standards in 13 major EPA databases by FY 2003. The Data Standards Council, which includes EPA, States, and Tribal representatives, will set priorities for establishing additional standards beyond the initial ones developed under REI.
- Over the next several years, EPA will use surveys to track consumers' satisfaction with the types of information provided in CCRs on drinking water quality.
- The Agency is initiating a major effort in FY 2000 on information security. EPA will be working with the General Accounting Office to address results of its recent information security review.
- By the end of FY 2001, the EMPACT Program plans to have 40 locally initiated Metro Projects underway in the 86 EMPACT metropolitan areas.
- Working in partnership with the States and Tribes, EPA will establish a single, integrated,

multimedia core of environmental data and information. This core will support a broad data exchange network with the States and Tribes.

- In FY 2000, EPA will take the first steps toward integrated electronic reporting through establishing an interim Central Receiving Facility (CRF) that allows State-to-EPA data transfer and by finalizing an electronic data interchange standard for cross-media environmental compliance reports. By FY 2001, States and regulated companies will have the option of electronically transferring data to the CRF for key compliance reporting programs, and by FY 2003, this capability will extend to all major compliance reporting programs.

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GOAL 8: Sound Science

Artwork by Gillian

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GOAL 8: SOUND SCIENCE, IMPROVED UNDERSTANDING OF ENVIRONMENTAL RISK, AND GREATER INNOVATION TO ADDRESS ENVIRONMENTAL PROBLEMS

EPA will develop and apply the best available science for addressing current and future environmental hazards, as well as new approaches toward improving environmental protection.

OVERVIEW

As stated in its Strategic Plan, EPA strives to ensure that “national efforts to reduce environmental risk are based on the best available scientific information.” Sound science enables EPA to identify the most important sources of risk to public health and the environment and thereby guide its policies and resource allocation. As EPA addresses increasingly complex issues in the future, its research programs will continue to provide the understanding and technologies needed to detect, abate, and avoid public health and environmental problems. Evaluating options for mitigating environmental risks also requires economic analysis tools for assessing the benefits and costs of environmental protection.

Building on its scientific, economic, and regulatory research and analysis activities, EPA strives to make environmental protection more flexible, efficient, and effective. The Agency’s efforts include streamlining core regulatory programs through a reduction in unnecessary monitoring and reporting requirements and designing and testing fundamentally new approaches with multimedia, industry-, or place-based focuses.

In its Strategic Plan, EPA established nine objectives to guide its innovative, science-based work toward this multi-faceted and mission-critical goal:

- By 2008, provide scientific understanding to measure, model, maintain, or restore ecosystems.
- By 2008, improve the scientific basis to identify characterize, assess, and manage environmental exposures that pose the greatest risks to the public.

- By 2008, establish capability and mechanisms to anticipate and identify environmental or other changes that might portend future risk and integrate futures methods into planning.
- By 2006, develop and verify improved tools, methodologies, and technologies for addressing high-priority human health and environmental problems.
- By 2005, increase the number of places using integrated, holistic partnership approaches and quantify the benefits.
- By 2005, increase the number of and opportunities for sector-based approaches.
- By 2005, enhance the capability of EPA’s Regional offices to assess environmental conditions.
- Conduct peer review and provide guidance on science underlying Agency decisions.
- Incorporate innovative approaches to environmental management throughout Agency programs.

FY 1999 PERFORMANCE

Understanding Ecosystems

By 2008, the Agency’s objective is to provide the scientific understanding to measure, model, maintain, or restore, at multiple scales the integrity and sustainability of ecosystems now and in the future. The Agency has four primary areas of emphasis within this objective: (1) improve environmental monitoring in order to measure the relative success of environmental policies; (2) develop the next generation of environmental modeling systems to assist local and Regional managers in evaluating

alternative environmental management policies; (3) continue the advancement of the environmental assessment sciences in order to provide the information needed by decision-makers to choose the best alternatives; and (4) conduct restoration experiments to provide solutions within an adaptive management process.

In FY 1999, EPA researchers completed the first stage of the Environmental Monitoring and Assessment Program (EMAP) effort in support of the Agency's FY 2001 commitment to complete and evaluate a multi-tiered ecological monitoring system for the Mid-Atlantic Region and provide select land cover and aquatic indicators for measuring status and trends (APG 50). As a result of completing the first stage of this effort, EPA proved that it can cost-effectively monitor the condition of ecosystems at a regional scale. The data collected to date form the foundation for assessing the overall condition of the Mid-Atlantic Region and move the Agency toward completion of this effort as planned by FY 2001. Equally as important, the lessons learned

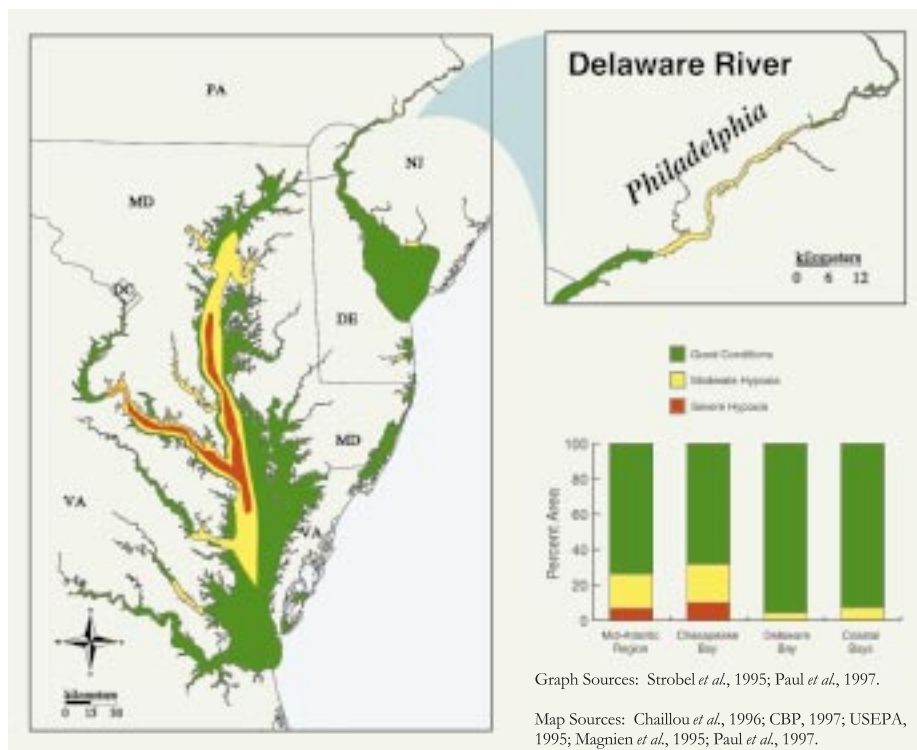
in designing the monitoring program can be applied nationwide, allowing other Regions to measure current environmental conditions and monitor ecosystem changes in a consistent manner.

EPA performed several prototype analyses addressing sulfur and nitrogen wet and dry deposition trends to meet the Agency's FY 1999 commitment to analyze existing monitoring data for acid deposition (APG 51). In one study, EPA researchers analyzed data on 205 monitored lakes and streams in five different geographic regions. The analysis indicated that lakes and streams in certain regions of North America and Europe show some signs of recovery from acid rain. The results to date show significant declines in the levels of sulfate, while at the same time, only a few regions demonstrated even a modest decline in levels of nitrate, another acid rain component. The next step in the analysis will be to compare the trends in air quality and deposition chemistry to trends in surface water quality. EPA will incorporate the results from this and other analyses into a formal report on acid rain to be

released in 2002. Chapter 6 of this report provides information on the status of UVB (ultraviolet radiation-B) monitoring efforts related to this acid deposition research.

EPA met another FY 1999 goal by providing ecological risk assessment case studies for two watersheds, final guidelines for reporting ecological risk assessment, and ecological risk assessment guidance and support (APG 52). Ecological risk assessment case study reports for two watersheds, the Middle Snake in Idaho and Clinch Valley in Virginia and Tennessee, are now complete. Since releasing its ecological risk assessment guidelines one year ahead of schedule in 1998, EPA also has conducted numerous ecological risk assessment training sessions to

Dissolved Oxygen Conditions in the Mid-Atlantic Region



Distribution of summertime dissolved oxygen within one meter of bottom sediments across estuaries in the Mid-Atlantic Region. Conditions of low levels of dissolved oxygen can harm bottom-dwelling organisms and are most widespread in the middle portions of Chesapeake Bay and the lower Potomac River.

encourage the use and further refinement of the guidelines. Two FY 1999 workshops focused on refining the process for ecological risk characterization at the watershed scale and conducting the first phase of the ecological risk assessment process for regional-scale assessments.

Also in FY 1999, EPA began several projects in ecosystem restoration with special emphasis on the restoration of stream banks, or riparian zones, considered by ecologists to be one of the most important habitats. EPA Headquarters is working with its Region 3 office and the State of Maryland on these projects and will continue to provide reliable information on alternative restoration approaches.

Understanding the Greatest Environmental Risks to Human Health

EPA has committed, by 2008, to improve the scientific basis used to identify, characterize, assess, and manage environmental exposures that pose the greatest health risks to the American public. This requires research, model development, and other data collection efforts to reduce significant areas of uncertainty. Reduced uncertainty will enable the Agency to more accurately assess health risks associated with exposure to environmental pollutants, ultimately leading to more effective implementation of EPA's regulatory mandates under the Federal Insecticide, Fungicide, and Rodenticide Act, the Toxic Substances Control Act, the Food Quality Protection Act, and other environmental legislation.

In FY 1999, the Agency met its goal to produce a first generation model that can be used in a prospective context to provide reliable assessments of the potential risks to human populations posed by exposure to pesticides and other toxic chemicals (APG 53). The Agency also initiated eight studies on childhood exposure to pollutants. The resulting data and methods will add to an existing body of tools and knowledge critical to EPA's ability to conduct risk assessments and implement sound environmental policy.

The Agency also made significant progress in FY 1999 toward meeting its long-term goal of developing and verifying innovative methods and

models for assessing the susceptibilities of populations to environmental agents (APG 54). During FY 1999, EPA awarded seven new grants on a variety of topics related to children's risk from environmental pollutants, including childhood cancer, the neuro-behavioral effects of air pollutants, children's exposure to pesticides, and the effects of neonatal exposure to naphthalene. The results of these studies, which will be available by 2003, will assess children's susceptibility through a multidisciplinary evaluation of age-related differences in exposure and toxicity. These results will move the Agency toward achievement of its long-term goal as planned by FY 2008.

Detecting Emerging Risks

In addition to addressing existing risks, EPA has committed that by 2008, it will be able to anticipate and identify environmental or other changes that may indicate future risk, integrate futures planning into ongoing programs, and promote coordinated preparation for and response to change. By increasing its capacity to look toward emerging risks, EPA will be able to identify the data needs and develop the required analytic approaches to reduce risks before they affect human health or the environment.

An important aspect of this objective is research into endocrine disrupting chemicals (EDCs). Evidence continues to build that humans as well as domestic and wildlife species may suffer adverse health effects from exposure to EDCs. *EPA achieved its FY 1999 goal to complete a protocol for a field study of children exposed to two EDCs (APG 55).* This study will produce high-quality data characterizing the key factors that influence human exposures to EDCs and other persistent pesticides, toxics, and metals. The data resulting from this and other follow-on studies will help refine human exposure models and provide insights into where, when, and how children and other sensitive sub-populations are exposed to these environmental contaminants. EPA's EDC research program also provided standardized protocols for mammalian assays to monitor endocrine activity. The Agency completed protocols to assess pubertal development and thyroid function in immature (23-53 day old) male rats and pubertal development and thyroid

function in juvenile female rats. EPA needs these protocols to successfully implement provisions of the Food Quality Protection Act.

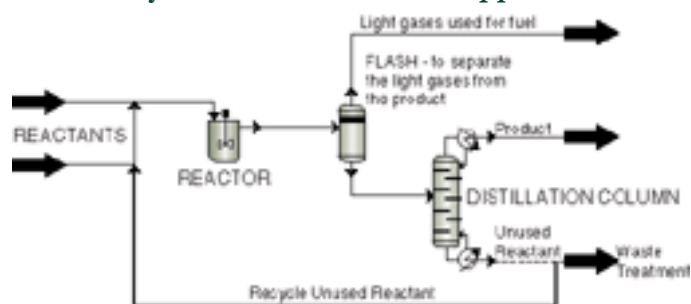
In addition to the developments in risk assessment data, the quality and consistency of the economic information and methods available to EPA have improved due to activities completed in FY 1999. First, EPA updated and released guidelines on preparing economic analyses to consider in the development of regulations. Second, the Agency convened the first of three workshops in an ongoing economic research and policy series, bringing together economists to explore important questions, including the valuation of ecological effects and childhood health effects. Also, the National Science Foundation and EPA implemented a newly prepared research plan focusing on the Agency's priorities for environmental economics when soliciting joint economic research proposals. Finally, EPA and other Federal agencies made a major commitment to improve the quality and completeness of future economic analyses by renewing a national survey of pollution expenditures within the U.S. manufacturing sector.

Understanding How to Prevent Pollution and Design New Environmental Protection Technologies

Recognizing the importance of prevention, EPA's objective is that by 2006, it will develop and verify improved tools, methodologies, and technologies for modeling, measuring, characterizing, preventing, controlling, and cleaning up contaminants associated with high-priority human health and environmental problems. EPA supports pollution prevention (P2) as a necessary and logical strategy for dealing with high-risk human health and environmental problems. EPA researchers are focusing on the design and development of user-friendly, quantitative P2 tools. The Agency is also developing and verifying new technologies (NT) that are preventive in nature.

EPA research in the area of pollution prevention uses multiple tools and methodologies that provide quantitative information for selecting preferred pollution prevention options. The Waste Reduction (WAR) Algorithm uses process information to

Using the Waste Reduction (WAR) Algorithm to Identify Pollution Prevention Opportunities



evaluate the environmental friendliness of a process design and to identify areas for pollution prevention, as shown in the simplified process flow diagram above.

In FY 1999, EPA made significant progress in a number of areas toward achieving its P2/NT objective. The Agency's Environmental Technology Verification (ETV) Program verified 53 technologies as meeting pollution prevention and related claims. EPA also completed a series of research efforts on preventing the formation of volatile organic compounds (VOCs). To make these research results available to stakeholders, the Agency updated the Coating Alternatives Guide (CAGE) and placed it on the Internet. EPA also completed an inventory of tools that will guide further P2/NT development by focusing on the needs of community decision-makers.

Peer-reviewed extramural research conducted under the Agency's Science to Achieve Results (STAR) grants program also supports EPA's objective for developing pollution prevention and other innovative approaches. In FY 1999, EPA concentrated on two research areas that support preventive approaches for human health and environmental protection: Technology for a Sustainable Environment (TSE) and economic valuation. Under TSE, research took place on the use of carbon dioxide to replace toxic chemical solvents in painting and other coating processes and in plastics production. In addition, research on economic valuation produced improved survey techniques for determining how the public values ecological resources, such as clean, fishable lakes and rivers.

Finally, through its participation in the Federal interagency High Performance Computing and Communications program, the Agency continued work developing an innovative model design and community-oriented computing approach for investigating large-scale, complex environmental problems. A major part of this effort is further development of the Multimedia Integrated Modeling System (MIMS) through peer review and demonstration of its first component, the community multi-scale air quality model for particulate matter (PM). *EPA finished work on the air component of the MIMS and met its FY 1999 goal of improving computational efficiency in the analysis of PM by 25 percent (APG 56).* EPA expects that the increased computational efficiency resulting from this work will enable State agencies and other regulators to perform an adequate number of model simulations for PM assessment and air quality policy purposes.

Quantifying Tangible Results of Integrated Partnerships

As part of a continued focus on innovative approaches, by 2005 EPA's objective is to increase partnership-based projects with counties, cities, States, Tribes, resource conservation districts, and/or bio-regions and bring together needed external and internal stakeholders to effect positive environmental change with a focus on multimedia results.

In FY 1999, EPA issued its Framework for Community-Based Environmental Protection, which provides the tools for integrating this approach across the Agency's program areas. The Framework also documents the benefits of these innovative partnerships. In FY 1999, EPA supported 99 such

projects through its Regional Geographic Initiative (RGI). Of the 99 projects, 35 foster partnerships in new areas. All of the RGI projects support either important Administration or Agency initiatives and contribute to the achievement of other Agency long-term goals. For example, Region 1's project on Smart Growth in New England supports both air and water goals in developing tools and approaches for communities to use in combating sprawl and encouraging development that makes economic, environmental, and social sense. Region 7's Omaha project supports many goals by implementing community-based projects to address illegal dumping, lead poisoning, and other environmental issues of most concern to the city.

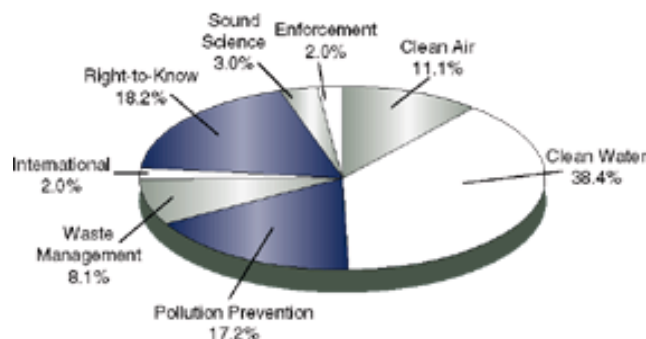
Improvements Through Testing Sector- and Facility-Based Innovations

By 2005, EPA's objective is to test increasing numbers of innovative facility- and sector-based strategies to achieve improved environmental protection and make successful approaches broadly available. EPA works toward this objective through Project XL and the Agency's sector-based programs growing out of the Common Sense Initiative (CSI), joining with private and public sector organizations to test innovative strategies that produce superior environmental results.

XL projects are undertaken by private or public sector organizations under agreements with EPA. In FY 1999, EPA signed five new XL Agreements, bringing the number of projects in the implementation stage to 15. As of FY 1999, an additional 36 XL proposals *were either under development or in negotiations, meeting EPA's FY 1999 commitment to have 50 XL projects under implementation or in development or negotiation (APG 57).*

Also in FY 1999, EPA and its partners determined that 30 innovations resulting from XL projects have the potential to improve traditional regulatory programs. Overall, EPA has found that XL projects produce greater reductions in environmental releases than would have occurred under conventional regulatory approaches. At the same time, XL project participants reduce environmental management costs and improve their

Distribution of Regional Geographic Initiative (RGI) Projects Across Agency Goals



competitiveness as a result of expedited or consolidated permitting, reduced record-keeping and reporting requirements, and greater operational flexibility afforded by facility-wide emission caps.

Similarly, EPA's sector programs sought "cleaner, cheaper, and smarter" approaches to environmental protection through sector-based, multi-stakeholder initiatives that rely on consensus-building processes. Some innovations tested through CSI projects have already resulted in regulatory changes. For example, the CSI Iron and Steel Sector project found that changes in electric arc furnace operations allow improved monitoring of PM emissions through use of more flexible emission control system procedures. In FY 1999, EPA promulgated a final air emissions rule incorporating these procedures. Other outcomes of sector-based efforts include the following:

- The metal finishing sector developed and launched an industry sector performance-based environmental stewardship program with voluntary "better than compliance" facility performance targets and a comprehensive stakeholder-backed action plan to provide incentives, create tools, and remove barriers to the accomplishment of these targets. More than 350 companies, 19 States, and 60 local governments are participating in this program and achieving environmental results as high as a 93 percent reduction in water use, 77 percent reduction in energy use, 99 percent reduction in organic chemical usage, and 73 percent reduction in metals emissions.
- EPA has begun to incorporate sector-based environmental management approaches into its core regulatory programs. For example, the Agency has identified several sectors for potential multimedia coordination within rule-making efforts in FY 2000, such as mercury cell chloralkali plants and publicly-owned treatment works (POTWs). EPA also is exploring the development of sector-based permit reform models as a means of expanding the application of innovative new permit approaches.
- Through the Sustainable Industry process, EPA is working with several industry sectors to

develop incentives, remove barriers, and create tools to improve environmental performance while lowering regulatory burdens. Some of these sector-specific activities may lead to the creation of voluntary industry stewardship programs similar to the metal finishing program described above, with performance track incentives and rewards built in. Other sectors will pursue innovative reform ideas on a less expansive scale. Current Sustainable Industry sectors include metal casting and foundries, meat processing, specialty-batch chemical manufacturing, and shipbuilding.

- The Atlantic Steel XL project in Atlanta demonstrates EPA's efforts to provide regulatory flexibility and foster livable communities. This project is designed to remediate and develop property that for over a century was an industrial steel mill. When complete, the project will turn a Brownfield site into new neighborhood amenities and housing opportunities in the city, reduce storm water runoff, save open space, bring stores closer to work and schools closer to homes, and reduce vehicular travel by more than 50 million miles a year.

Providing Validated Data to Enable Accurate Environmental Decision-Making

By 2005, EPA's objective is that its Regional offices will have demonstrated capability to assess environmental conditions within their jurisdictions, compare the relative risk of health and ecological problems, and assess the environmental effectiveness of management action in priority geographic areas. This objective is geared toward providing field sampling, analytical and data management support, and quality assurance to Agency programs.

To meet this objective, EPA has established Centers of Applied Science to develop sampling, quality assurance, and analytical methods to support assessment of environmental issues. The Centers will facilitate the development and application of new and innovative technologies, such as alternative methods for trace level dioxin/furan analyses and new methods for the identification and quantification of microbial contaminants, such as *Cryptosporidium*. EPA will put information

management systems in place to enable itself and partner agencies to locate, assess, and share environmental data and analytical methods. These efforts will continue to build EPA capacity, as well as that of partner agencies, by providing technical and analytical support in the assessment of environmental problems and by helping to convert environmental data into useful information for decision-making. In FY 1999, Centers of Applied Science were established in the following areas: ambient air monitoring; environmental biology; environmental chemistry; environmental microbiology; and analytical pollution prevention methodologies.

Science Advisory Board Guidance that Improves the Production and Use of Science at EPA

EPA seeks to ensure the quality and relevance of all of its scientific and technical information. To accomplish this aim, EPA's Science Advisory Board (SAB) conducts peer reviews and provides guidance on the science underlying Agency decisions. The SAB is a legislatively mandated group of non-governmental scientists, engineers, and economists charged with providing independent technical advice on environmental issues to EPA's Administrator and others (e.g., Congressional committees). The SAB conducts its business in public meetings and benefits from public input during its deliberations. Through these proceedings, Agency positions are subjected to critical examination by leading experts in the field in order to test the currency and technical merit of those positions. In FY 1999, the SAB held 48 meetings and produced 38 reports (<http://www.epa.gov/sab/fiscal99.htm>).

Among the activities that were particularly important to the Agency and the way that it does business are the peer reviews of the following: guidelines for preparing economic analyses, fine particle monitoring methodologies, the use of human data in decision-making, the guidelines for cancer risk assessment, and the FY 2000 Presidential Science and Technology Budget Request.

Incorporating Innovative Approaches into EPA Programs

One of the most important aspects of EPA's reinvention program is the use of innovative approaches to help industry and the regulated community improve environmental performance and secure compliance with environmental laws. EPA's objective is to incorporate innovative approaches in environmental management throughout its programs so that the Agency and its external partners achieve greater and more cost-effective public health and environmental protection.

The Agency believes a system that promotes stewardship, in addition to compliance with environmental requirements, has the greatest potential for advancing environmental management capabilities and solving environmental problems. In January 1999, the Administrator established the Innovations Task Force, bringing together experts and stakeholders from inside and outside the Agency to share their views on the next steps for reinvention activities. The Task Force issued a report that describes ten strategic actions the Agency will take in the next 12 to 18 months to motivate superior environmental performance and aid environmental compliance where needed (<http://www.epa.gov/ooaujeag/taskforce/report99>). Creating a system where everyone takes more responsibility for protecting the environment requires some changes. The Agency is committed to a number of actions to help accelerate environmental progress:

- Using incentives to encourage action beyond requirements and promoting environmental management systems (EMSs) that help organizations incorporate environmental considerations into business operations.
- Developing a "performance track" that identifies and rewards environmental leaders; working with the States, Tribes, industry, and environmental and other interest groups to define what it means to be a top environmental performer; and identifying appropriate building blocks to enhance the current regulatory system.

- Providing timely and accessible compliance assistance by becoming a more effective "whole-saler" of compliance assistance information; providing tools, assistance, and resources needed to comply with the requirements as the rules take effect; and using compliance assistance in strategic combination with enforcement, monitoring, and incentives to achieve environmental results.
- Creating flexible and streamlined permitting by working with the States to make the permit system more effective at meeting environmental goals without creating unnecessary social and economic burdens; and moving permitting toward measuring performance while providing regulated parties more flexibility in how standards are met.
- Helping communities make sound environmental decisions by developing new environmental management tools, offering technical assistance, providing facilitation support for dialogue on environmental issues, and consulting with stakeholder representatives before making Agency decisions about programs or policies that directly affect them.

PROGRAM EVALUATION

EPA engaged in many efforts in FY 1999 to evaluate the quality and relevance of its research programs. First, research proposals received in response to Requests for Applications underwent rigorous external peer review. Second, the EPA Board of Scientific Counselors evaluated the Agency's science and engineering research programs, laboratories, and research management practices and recommended actions to improve their quality and relevance to the mission of EPA. In addition, the Board evaluated and provided advice concerning the utilization of peer review within Agency research programs to enhance the quality of science at EPA.

An independent third-party review of the four-year Common Sense Initiative (CSI) effort was conducted in FY 1999 to assess the extent to which CSI succeeded in meeting its goals and to determine what was gained from the sector-based, multi-stakeholder, and consensus aspects of the Initiative.

The study concluded that CSI was extremely productive in terms of projects developed and recommendations submitted to the Agency for action. The study also showed that the pace of development of CSI's recommendations and project implementation increased over that reported in a earlier evaluation (<http://www.epa.gov/sectors/csi.htm>).

CONCLUSIONS AND CHALLENGES

EPA continues to work toward its long-term commitment of developing and applying sound science and innovative approaches to environmental protection. Sound science enables EPA to identify the most important sources of risk to public health and the environment and thereby guide its policies and resource allocation. As EPA strives to pioneer and utilize the best available science to understand and address environmental hazards, the Agency faces the additional challenge of communicating scientific and engineering accomplishments to properly represent their role in the achievement of the overall environmental protection mission.

Evaluating options for mitigating environmental risks also requires economic analysis tools for assessing the benefits and costs of environmental protection. The state of environmental science and technology is rapidly changing, such that what is cutting-edge this year may no longer be so next year. For this reason, Agency scientists and engineers continue to pursue new avenues of research in order to understand current environmental problems and foresee those on the horizon.

KEY MILESTONES FOR THE FUTURE

- EPA researchers will use the work completed in FY 1999 under the Environmental Monitoring and Assessment Program (EMPACT) to produce a report in FY 2000 on monitoring findings in the Mid-Atlantic Region as a cost-effective means of measuring ecosystem conditions. This report will move EPA toward the FY 2001 completion and evaluation of a multi-tiered ecological monitoring system for the Mid-Atlantic Region.
- In FY 2001, EPA will provide land cover and aquatic indicators for measuring ecosystem condition and trends. This work will establish a

baseline for documenting changes in the ecological condition of the nation's ecosystems and results of regional-scale environmental management policies.

- Studies of organophosphates, trazines, and pyrethroids funded through EPA research grants produced a series of papers in FY 1999 summarizing the methodologies used and preliminary data analyses. The results of these studies will facilitate individual FY 2000 assessments of children's exposure to pesticides in Washington, Minnesota, and Arizona. In FY 2000, the Agency will award additional research grants to facilitate development of an integrated exposure assessment of children in three regions of the United States.
- In FY 2000, efforts to prevent or reduce pollution will focus on completing development of more computer-based tools to simulate product, process, or system design changes and will complete demonstrations of one or more generic technologies for chemical and industrial processes. By as early as FY 2001, EPA will develop, evaluate, and deliver technologies and approaches that eliminate, minimize, or control high risk pollutants from multiple sectors. This work will benefit industries and communities having difficulty meeting control, emission, or effluent standards.

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GOAL 9: Credible Deterrent/Greater Compliance

Artwork by Robbie

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GOAL 9: A CREDIBLE DETERRENT TO POLLUTION AND GREATER COMPLIANCE WITH THE LAW

EPA will ensure full compliance with laws intended to protect human health and the environment.

OVERVIEW

The environmental benefits envisioned by Federal regulations and statutes can only be achieved by ensuring the compliance of regulated facilities and entities. By providing assistance designed to prevent violations, incentives to motivate compliance, and enforcement actions to correct violations and deter others, EPA obtains continuous improvement in compliance with standards, permits, and other requirements. As a result, environmental risks are mitigated, regulated facilities do a better job of environmental management, and public demands for environmental information are met.

In partnership with the States and Federally recognized Tribes, EPA's enforcement and compliance assurance program regulates approximately eight million entities that range from community drinking water systems to pesticide users to major industrial facilities. Almost 1.3 million of these are facilities, such as municipal wastewater treatment plants, large manufacturing and industrial operations, or hazardous waste treatment and storage facilities, for which performance is closely tracked and data maintained. The remaining 6.5 million entities range from small facilities to individual property owners. Given the broad scope of regulatory requirements under the various environmental statutes and the large and diverse universe of regulated entities, the enforcement and compliance assurance program uses a variety of tools and strategies to maximize compliance.

Over the past five years, EPA has developed new tools that provide compliance assistance and compliance incentives to complement a strong program of compliance monitoring and civil and criminal enforcement. A strong enforcement effort provides the foundation for the national compliance program, motivates regulated entities to seek assistance and

use incentive policies, and provides fairness in the marketplace by ensuring that noncomplying facilities do not gain an unfair competitive advantage.

As a result of the delegation/authorization provided for by most statutes, State, Tribal, and local governments bear much of the responsibility for ensuring the compliance of regulated facilities and other entities. Nationally, on average, States conduct over 80 percent of all inspections and are responsible for 84 percent of formal enforcement actions. States also are the primary vehicle for delivering on-site compliance assistance to regulated sources.

In its Strategic Plan, EPA established two objectives that contribute to achieving the goal: to identify and reduce noncompliance with environmental laws and to promote compliance through assistance and incentives.

FY 1999 PERFORMANCE

Identifying and Reducing Noncompliance with Environmental Laws

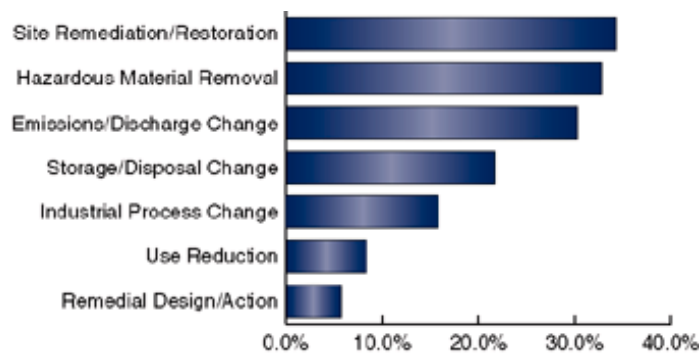
EPA's objective is to identify and reduce significant noncompliance in high-priority areas while maintaining a strong enforcement presence in all regulatory program areas.

In FY 1999, EPA exceeded its goal to deter non-compliance by maintaining levels of field presence and enforcement actions, particularly in high-risk areas and where populations are disproportionately exposed (APG 58). The Agency uses compliance inspections and assessments to determine the compliance status of a regulated facility. *In FY 1999 EPA conducted 21,410 inspections.* Where necessary, EPA will address noncompliance with an enforcement action appropriate to the violation. *In FY 1999, EPA undertook 3,935 civil judicial and administrative enforcement actions,* the highest

number taken over the past three years. These activities identify and correct noncompliance and deter future violators. Deterrence is further enhanced through the use of penalties calculated to level the economic playing field by ensuring that violators, including Federal facilities, do not realize economic benefit from noncompliance. The criminal enforcement program deals with violations which are the result of knowing or negligent action.

Bringing enforcement actions can lead to facility compliance, changes in facility operations, and reductions in pollutant loadings. In FY 1999, over 6.8 billion pounds of pollutants were reduced as a result of EPA enforcement actions. Also, about 21 percent of concluded enforcement actions resulted in improvements to the environment. The chart below identifies examples of these improvements. Another 47 percent of concluded enforcement actions resulted directly in changes to facility management practices, which should lead to environmental improvements. In FY 1999, polluters were required to spend more than \$3.6 billion, a 62 percent increase over FY 1998 levels, to correct violations and take additional steps to protect the environment. Clean Air Act settlements were responsible both for the highest amount of injunctive relief (over one billion dollars or 32 percent of the total) and for the greatest value (\$141 million or 60 percent of the total) of supplemental environmental projects (SEPs) through which violators pay for various kinds of additional environmental improvements.

Examples of Environmental Improvements from FY 1999 Civil Cases



Percentages are based on the compliance requirements of the 741 FY 1999 civil settlements which required improvements in the use or handling of pollutants. Many settlements reported multiple results.

The following are examples of FY 1999 enforcement actions that led to environmental improvements in large part by addressing high-risk violations that are priority areas for the enforcement and compliance assurance program:

- On October 22, 1998, the Department of Justice and EPA announced a settlement with seven major manufacturers of diesel engines that will prevent 75 million tons of harmful nitrogen oxide (NO_x) emissions from entering the atmosphere by the year 2025. The settlement included an \$83.4 million total penalty, the largest civil penalty ever for violation of environmental law.
- On July 29, 1999, the United States and the State of Georgia reached a settlement with the City of Atlanta to pay a civil penalty of \$700,000 and take corrective action to bring its sewer system into compliance with the Clean Water Act and the Georgia Water Quality Control Act. In an earlier settlement, the City of Atlanta also agreed to implement a \$27.5 million SEP to create a greenway corridor and clean up various streams, as well as pay a \$2.5 million penalty—the largest Clean Water Act penalty ever assessed against a municipality.
- On July 21, 1999, Royal Caribbean Cruises, Ltd., pled guilty to 21 violations of Federal law and was fined \$18 million for violating the Clean Water Act and the Oil Pollution Act by dumping waste oil and hazardous chemicals into the ocean and for making false statements to the Coast Guard. Royal Caribbean agreed to institute a five-year environmental compliance plan.

In FY 1999, EPA continued to make great strides toward targeting high-priority areas for enforcement and compliance assistance and completing baseline data assessments in major databases needed to measure changes in key indicators of compliance. Specifically, the Agency met its goal of identifying five high-priority areas and improving two data systems (APG 59).

With respect to identifying compliance priorities, the Agency conducted several targeting analyses to identify the most significant environmental problem areas. For example, the Agency

analyzed industrial sectors using new data integration techniques, including a compliance index based on such factors as inspection coverage, current significant noncompliance rates, and a pollutant index. This analysis led to the identification of seven environmental problem areas to target, thereby meeting the goal. EPA's efforts to provide Regions with targeting tools are also yielding results. For example, EPA Region 3 recently conducted investigations of sources with plant modifications to assess compliance with New Source Review/Prevention of Significant Deterioration (NSR/PSD) requirements.

NEW SOURCE REVIEW/PREVENTION OF SIGNIFICANT DETERIORATION (NSR/PSD) INVESTIGATIONS UNCOVER PERMIT VIOLATIONS

NSR/PSD is a preconstruction review and permitting program that applies to major and modified major Clean Air Act sources. NSR/PSD assures that major sources apply state-of-the-art equipment to minimize impacts on air quality. In a growing economy, facilities are expanding capacity and making significant plant modifications. In most instances these modifications trigger regulatory requirements, and plants may not be applying for the necessary permit amendments. Routine inspections sometimes do not identify plant modifications, so Region 3 piloted an investigation approach that incorporates up-front facility capacity and permit reviews. Using this approach, the Region developed criteria to identify facilities where plant modifications are likely to have occurred and then selected certain industries in which to undertake a more in-depth review. These investigations, while resource intensive, are yielding impressive results. Region 3 investigated eight pulp mills and found significant violations at seven of these facilities. Requiring the installation of control devices at these plants will result in large reductions in air emissions. Based on Region 3's results, most EPA Regions are now using these investigative tools and strategies.

The Agency continued to develop a complete baseline data assessment for multiple industries through the Sector Facility Indexing Project (SFIP). The SFIP measures key environmental indicators for more than 640 industrial facilities in five industrial sectors and provides public access to a wealth of

environmental information. The result is a collection of facility-level profiles that provide information on compliance and inspection histories, chemical releases and spills, demographic characteristics of surrounding areas, and facility production trends.

With respect to the Agency's goal of improving data systems, the Agency improved its Air Facility Subsystem (AFS) of the Aerometric Information Retrieval System (AIRS) and DOCKET. AFS contains emissions, compliance, and permit data for regulated stationary sources. EPA enhanced AFS to identify high-priority violations. DOCKET is the official EPA database for tracking and reporting information on civil judicial and administrative enforcement cases under all environmental statutes. Enhancements to DOCKET resulted in the addition of information on self-audits conducted by facilities and improved quality of information on enforcement action outcomes. Also, EPA made various improvements to 12 other national enforcement and compliance data systems and responded to over 1,000 user support requests relating to enforcement and compliance data systems.

For FY 1999, EPA exceeded its goal of assisting States and Tribes in enhancing the effectiveness of their enforcement, compliance assurance, and incentive programs by providing specialized assistance and training. Specifically, the Agency provided 218 courses to State and Tribal officials to enhance the effectiveness of their programs (APG 60). Actual deliveries exceeded the projected target because EPA emphasized capacity-building by providing more training opportunities for State, local, and Tribal professionals than originally projected. These courses help build State and Tribal capacity to conduct inspections and investigate environmental crimes. EPA is now working to expand and improve its training efforts through the National Enforcement Training Institute Online, a virtual university on the Internet that will automate services and provide on-demand training, course registration, and easy access to reference material.

Other efforts to assist State and Tribal partners in FY 1999 included the following:

- Working with States to ensure that State audit laws and policies met minimum Federal enforce-

ment, information gathering, and public access criteria. For example, the Agency's discussions with a number of States resulted in changes to or interpretations of audit laws that were ultimately acceptable to those States and that also met the minimum Federal requirements.

- Awarding \$1.8 million in cooperative agreements to Wisconsin, Colorado, Washington, Oregon, Missouri, Texas, Connecticut, California, Indiana, Maryland, and New Hampshire to develop, implement, and share the results of outcome-based performance measures pilot projects for enforcement and compliance assurance programs.
- Distributing \$1.8 million in grant funds to assist Federally recognized Tribes in implementing compliance assistance, compliance monitoring, and enforcement capacity-building activities. For example, EPA provided funding to Tribes to assemble information on the compliance status of facilities located in Indian country, to assess environmental conditions associated with landfill closure, and to develop waste reduction and recycling programs.

Promoting Compliance Through Assistance and Incentives

EPA's objective is to promote the regulated community's voluntary compliance with environmental requirements through compliance incentives and assistance programs.

EPA met its goal of *increasing the regulated community's use of compliance incentives and their understanding of, and ability to comply with, regulatory requirements; including operating nine small business compliance assistance centers and completing sector notebooks, guides, and other outreach materials begun in FY 1998 (APG 61).*

EPA developed the Audit/Self-Policing Policy to encourage voluntary auditing and self-disclosure of environmental violations and to provide a uniform enforcement response toward such disclosures. Under the Audit Policy, EPA does not seek severity or "gravity-based" penalties and generally does not recommend prosecution when facilities promptly disclose and expeditiously correct compliance

problems found through voluntary environmental audits or the use of compliance management systems.

TELECOMMUNICATION INDUSTRY AUDIT POLICY SETTLEMENTS

In February 1999, EPA granted relief under its Audit Policy from certain penalties to 10 telecommunications companies that found and disclosed their own violations. The 10 companies voluntarily disclosed and promptly corrected 1,300 environmental violations that occurred at more than 400 of their facilities nationwide. Later, in the fall of 1999, seven additional telecommunications companies were granted relief from civil penalties for voluntarily disclosing and promptly correcting a total of 742 environmental violations that occurred at more than 200 of their facilities across the nation. Both of these audit disclosures stem from outreach efforts by EPA after the January 1998 settlement with GTE. That settlement resolved more than 600 Emergency Planning and Community Right-to-Know Act and Spill Prevention Control and Countermeasures violations at 314 GTE facilities in 21 States and was the largest Agency settlement reached to date through EPA's self-disclosure policy.

Disclosure activity has increased every year since the effective date of the policy. In FY 1999, EPA more than doubled its goal of obtaining 400 self-disclosures from facilities under the Audit Policy, with approximately 1,000 facilities reporting violations from approximately 260 companies. An additional 700 disclosures also resulted from targeted self-audit initiatives. For example, the Region 5 Mini-Mill Project used the Audit Policy to provide all mini-mills in the six States within the Region a six-month window of opportunity to report any violations found and correct the problems. Ten of the 22 mini-mills carried out self-audits, and Region 5 followed up with inspections at the remaining 12. No penalties were assessed for mills that voluntarily disclosed and corrected violations through a self-audit. Enforcement actions have been taken against several of the mills that chose not to self-audit and that were later inspected and found in violation.

In addition to creating environmental benefits, the voluntary self-policing by facilities enhances government efforts to maximize compliance and allows regulated entities to review their operations holistically. To further expand the benefits of this program, EPA has undertaken a series of sector-based enforcement initiatives. For instance, EPA developed a multimedia initiative with the Industrial Organic Chemical Sector that resulted in 45 self-disclosures. EPA also began discussions with the airline industry in July 1999 to highlight a settlement with American Airlines that involved an audit of its facilities at 152 airports. That settlement resulted in prompt correction of numerous Federal fuel standard violations, payment of a \$95,000 penalty corresponding to the economic benefit resulting from the noncompliance, and changes at Boston's Logan airport that will eliminate an estimated 700 tons of pollutants from the air every year. Also, in FY 1999, 76 small businesses came forward to disclose violations under the Small Business Policy program, a seven-fold increase over FY 1998. EPA is modifying the Small Business Policy to expand the options allowed under the Policy for discovering violations and to establish a longer time period for disclosure.

In FY 1999, EPA operated nine Compliance Assistance Centers designed to help small businesses and small governmental entities understand and comply with their regulatory obligations (APG 61). The Centers' Internet sites focus on local government and specific industry sectors and provide applicable regulatory and technical information in a convenient and user-friendly manner. The Centers' Internet sites offer "plain English" summaries of regulations and access to State regulations, vendor directories, and numerous other technical resources. In FY 1999, in total, the Centers' Internet sites were visited over 750 times a day by businesses, compliance assistance providers, other government representatives, and the general public, resulting in a total of 260,000 user sessions. Three of these Centers received awards: 1) *GreenLink®*—the automotive service and repair center—has been selected to receive a Vision 2000 Model for Excellence Award by the Office of Small Business Advocacy for its work with "regulations that work for small busi-

ness;" 2) ChemAlliance—the chemical manufacturers center—has been listed by the Dow Jones Business Directory as a "select site;" and 3) the editors of *@gOnline*, *Successful Farming's* online magazine, have selected the National Agriculture center (Ag Center) as a "high-ranking site."

COMPLIANCE ASSISTANCE CENTERS LEAD TO IMPROVEMENTS

Based on eight voluntary Internet surveys, approximately 70 percent of the companies and local governments that use the Centers said they took one or more positive actions as a result (e.g., changing the handling of waste, obtaining a permit, changing a production process, contacting a regulatory agency). As a result of these actions, over 50 percent felt they had a cost savings, and over 75 percent indicated an environmental improvement (e.g., reduced air emissions, conserved water). Over 80 percent of survey respondents rated the Centers as useful or very useful for understanding environmental regulations, while only three percent of respondents did not find them useful. Over 65 percent of surveyed users visit a Center Internet site at least once a month. Nearly one-third of those surveyed visit at least once per week. Moreover, data from the second national level of compliance survey of the automotive service and repair industry show that compliance assistance projects, like *GreenLink®*, are having a profound effect on the industry's level of compliance. This survey, when compared to the 1997 survey, indicates that the level of compliance has improved. In 1999, 56 percent of the industry achieved a targeted level of compliance as compared with the 1997 level of 26 percent, a two-fold improvement.

In addition to the Compliance Assistance Centers, EPA continued to develop a wide variety of other tools and outreach materials to promote compliance with environmental laws on an industry-by-industry basis, reaching approximately 330,000 entities. These tools include industry sector notebooks, plain language compliance guides, training modules, and compliance checklists. In FY 1999, EPA completed 10 sector guides and more than 30 other outreach documents for industries such as

food processing and chemical manufacturing. Other compliance assistance materials completed in FY 1999 include the following:

- Four environmental audit protocol manuals to assist the regulated community in conducting environmental audits. The audit protocols cover the Resource Conservation and Recovery Act (RCRA), the Emergency Planning and Community Right-to-Know Act (EPCRA), and the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). To date, EPA has distributed approximately 7,500 audit protocols to industry and regulators.
- Environmental Management Reviews (EMRs) to assist 22 Federal agencies in meeting environmental requirements. EMRs focus on the system of policies and procedures the facility consistently uses to address environmental issues and maintain compliance with environmental regulations. The pilot program provided EPA with the ability to identify common strengths and areas of improvement needed in Environmental Management Systems (EMS).
- The “Environmental Management Resources for Indian Tribes” to serve as a reference for information on over 170 environmental resources specifically available to Tribes for developing and strengthening Tribal environmental programs. The guidebook also can assist Federal and State agencies, as well as other organizations that work with Tribes on environmental issues. This tool helps public sector entities understand their responsibilities, both as co-regulators and as regulated entities.

EPA also changed behavior through implementation of the National Environmental Policy Act (NEPA). Under NEPA, EPA reviews the environmental impacts of proposed major Federal actions. EPA identifies ecological and public health risks and negotiates changes to eliminate or mitigate these risks. In FY 1999, EPA reviewed 100 percent of significant proposed Federal actions subject to NEPA and persuaded sponsors to voluntarily address 68 percent of EPA’s concerns with the proposed actions. For example, EPA’s recommended changes to a flood control project increased

the acres of wetlands created and improved the location for disposal of a half million cubic yards of fill material.

PROGRAM EVALUATION

EPA uses both formal and informal approaches to evaluate the effectiveness of its enforcement and compliance assurance program. Methods range from a formal process of evaluating Regional, State, and Tribal performance to the use of stakeholder meetings to solicit views on effectiveness. Efforts undertaken in FY 1999 include the following:

- An examination of the overall performance of the Agency’s enforcement and compliance program through two program review conferences involving a wide range of stakeholders. The conferences elicited the views of participants on how EPA can improve public health and the environment through compliance efforts. Agency responses to stakeholder input include commitments to develop a national clearinghouse of compliance assistance materials, an annual compliance assistance plan, and compliance assistance tools for major new regulations. (A summary of the views expressed at the conferences is available on the Internet at <http://es.epa.gov/oeca/innovative/5yrfinal.pdf>.)
- A review of the performance of key compliance policies to determine whether they achieve the desired results. EPA evaluated the impact of its Audit Policy and the Small Business Policy and funded an independent evaluation of the effectiveness of State audit policies to determine the extent of use and the level of satisfaction of those who have used them. For example, in a voluntary, anonymous survey of 252 disclosing entities, 88 percent of the responding entities stated that they would use the EPA Audit Policy again, and 84 percent would recommend the Audit Policy to clients or counterparts.
- An evaluation by the Office of the Inspector General of EPA’s Clean Air Act compliance and enforcement program, which found that EPA and States need to develop a common understanding regarding the definition of a “significant violator” and actions required of the States

when dealing with significant violators. Following extensive coordination with the States, EPA issued new guidance that resolves these issues and aims to improve implementation of the CAA enforcement and compliance program for both EPA and the States. (The evaluation is located on EPA's Office of Inspector General Website at <http://www.epa.gov/oigearth/audit/list998/810024.htm>.)

CHALLENGES AND CONCLUSIONS

The enforcement and compliance program faces many challenges and new opportunities. In FY 1999, EPA took advantage of opportunities to improve the application of compliance assistance, incentives, and enforcement tools to address environmental risk, noncompliance, and build capacity. In addition, the Agency utilized sophisticated targeting approaches for setting priorities among risks and noncompliance patterns.

In the future, meeting the challenge of Agency-wide integration of data will enable EPA to provide a comprehensive, readily accessible, multimedia view of environmental conditions. This requires increased attention to data management and data quality. Part of EPA's efforts to modernize and improve data quality includes integration of the General Enforcement Management System (GEMS) into the Agency's Integrated Information Initiative. GEMS will become a core part of EPA's integrated information system, providing a consistent framework, process, and structure for collecting and tracking information. The GEMS system will improve public access to useful, understandable compliance information. It also will fill critical data gaps in core enforcement programs. To design and implement a single integrated system from existing systems, EPA will need to reconcile data, develop common data definitions, and address the concerns of multiple parties, including the States. With GEMS as a critical component, the integrated information system will enable the Agency to streamline enforcement operations, reduce the burden and costs of managing enforcement data for both EPA and States, and allow the Agency to report consistent, quality information about the performance of its programs.

KEY MILESTONES FOR THE FUTURE

- In FY 2000, EPA will use new measures established through the National Performance Measures Strategy (NPMS) to assess performance and improve effectiveness. NPMS includes both traditional measures, such as the number of inspections and enforcement actions, and also establishes outcome measures, such as compliance rates for selected regulated populations, pollutant reductions, other outcomes from enforcement actions, behavioral changes resulting from compliance assistance, and average time for significant violators to return to compliance.
- EPA will accelerate implementation of recommendations of the Agency's Innovations Task Force and of the two program review conferences held in FY 1999 to encourage and assist the regulated community in achieving and maintaining compliance with environmental laws. Using these recommendations as action items, the Agency will: continue its development as a "wholesaler" of compliance assistance tools and information; develop the tools in a timely manner and then work with others in the public and private sector to deliver the assistance; encourage organizations to use Environmental Management Systems to improve compliance and performance; continue to promote the use of voluntary compliance, such as the audit program; and seek greater stakeholder involvement in its planning process and greater public access to information. (The Report of the EPA Innovations Task Force is located on EPA's Reinvention Website at <http://www.epa.gov/reinvent/taskforce/report99>.)

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GOAL 10: Effective Management

Artwork by Li-Hsien

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GOAL 10: EFFECTIVE MANAGEMENT

EPA will establish a management infrastructure that will set and implement the highest quality standards for effective internal management and fiscal responsibility.

OVERVIEW

The effectiveness of EPA's management and the delivery of administrative services will determine, in large measure, how successful the Agency is in achieving its environmental mission. The Agency's management goal is an integral part of carrying out the mission of EPA; all of the Agency's \$7 billion budget flows through the administrative and stewardship functions identified under this goal. Activities under this goal support the EPA workforce and the environmental protection contracts and grants channeled to State, local, Tribal, and private sector partners. In fulfilling its managerial commitments, the Agency focuses on four overarching priorities:

- Promoting cost-effective investment in environmental protection and public health.
- Recognizing the special vulnerability of children to environmental risks and facilitating an intensified commitment to protect children's health.
- Building safe, healthy workplaces that strengthen communities.
- Preparing EPA for future challenges by building the skills of its employees and fostering diversity.

To meet these challenges, the Agency must integrate its administrative systems and streamline its processes, in essence reinventing the way it does business. EPA has made significant progress by rethinking problems and the solutions typically used to address them. The following discussion provides a description of FY 1999 progress, organized by the four objectives set in the Agency's Strategic Plan that guide EPA's work toward its overall management goal: executive leadership; management services, administration, and stewardship; building operations, utilities, and new construction; and audit and investigative services.

FY 1999 PERFORMANCE

Executive Leadership

EPA's objective is to provide vision and leadership (within the Agency, nationally, and internationally) as well as executive direction and policy oversight for all Agency programs. The Administrator, the Agency's National Program Managers, and the Regional Administrators provide the day-to-day vision and leadership needed for EPA to meet its public health and environmental commitments. EPA provides leadership in a number of managerial areas, including civil rights, equal employment opportunity, and judicial decisions in administrative and enforcement cases. In FY 1999, EPA emphasized the area of children's health protection within its leadership activities. Compared to adults, children are often more vulnerable and heavily exposed to toxins in the environment. In response, EPA management is committed to ensuring adequate protection of children's health throughout the Agency's programs.

In FY 1999, the Agency, based on recommendations of the Children's Health Protection Advisory Committee, selected eight regulations and regulatory areas for review to assure that they are protective of children's health. EPA committed to complete five reviews in FY 1999. However, due to the need to collect comprehensive information on children's health impacts, the Agency does not expect to complete these reviews until FY 2001 (APG 62). To address the related issue of how to value children's health when conducting benefit/cost analyses on environmental regulations, EPA convened a workshop in March 1999, which brought together leading economists for discussion and sharing of information.

REGULATIONS AND REGULATORY AREAS UNDER REVIEW FOR PROTECTION OF CHILDREN'S HEALTH

- Chloralkali Plants National Emission Standards for Hazardous Air Pollutants
- Pesticide Tolerances for Methyl Parathion
- Pesticide Tolerances for Chlorpyrifos
- Pesticide Tolerances for Dimethoate
- Pesticide Tolerances for Atrazine
- Maximum Contaminant Levels for Atrazine
- Farm Worker Protection Standards
- Air Quality and Asthma Risks

To empower individuals and communities to better protect children from environmental health threats, EPA implemented the Child Health Champion Community pilot program in FY 1999. As part of the program, 11 communities (a minimum of one in each Region) are undertaking new community-based initiatives. Each community has developed and begun implementing action plans to achieve specific goals for protecting children from environmental hazards.

In FY 1999, EPA also developed a brochure on how parents and other care-givers can protect children from environmental risks. Based on the tips in EPA's brochure, as pictured above, the National Safety Council produced a half-hour television program that aired on Bravo and CNBC. This program is now available on video, and EPA also has plans to distribute the original brochure nationwide (<http://www.epa.gov/children>).

The number of children with asthma continues to grow, especially among certain population groups, such as children living in inner cities. As part of the President's Task Force on Environmental Health Risks and Safety Risks to Children, EPA and the Department of Health and Human Services developed a comprehensive cross-government strategy to address environmental factors that play a crucial role in childhood asthma. Despite the prevalence of asthma and other childhood illnesses with the



EPA's brochure includes easy to understand tips to help caretakers understand how to protect children from environmental threats.

potential to be linked to the environment (e.g., lead poisoning), most research data used to assess potential risks and make regulatory decisions do not address children's potentially increased vulnerability. Much work needs to be done in order to understand and address the risks to children from environmental hazards. Specific FY 1999 activities related to children's health can be found in other chapters throughout this report.

Management Services, Administration, and Stewardship

Efforts under this objective provide the management services, administrative support, and other operations that enable the Agency to achieve its environmental mission and to meet its fiduciary and workforce responsibilities. EPA has taken many steps to improve the administration and stewardship of its resources. Use of innovative technologies and designs, a focus on customer needs and expectations, and the development of a highly skilled workforce define EPA's strategies to deliver the services necessary to meet its environmental mission.

EPA met its FY 1999 goal to identify, fix, and test all of the Agency's information and building systems to ensure Y2K compliance, a major management accomplishment for the Agency (APG 63). This work addressed 50 mission critical and 1,475

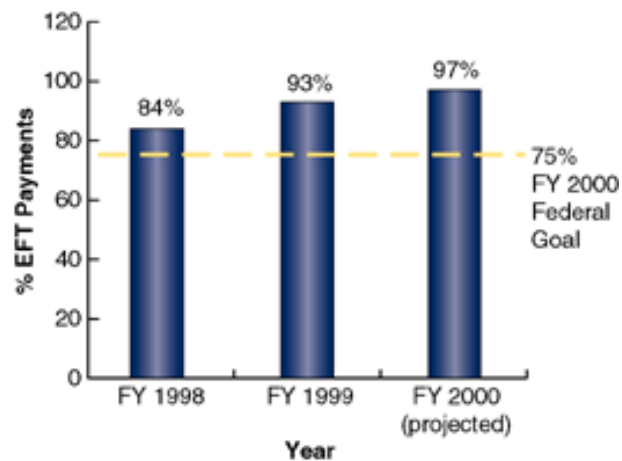
non-mission critical information systems as well as facility operations systems (e.g., elevators, heating/cooling systems) in all of EPA's 141 buildings.

EPA played a key leadership role in coordinating Federal agency efforts to address the Year 2000 (Y2K) issue in cooperation with State, local, other Federal, and private sector organizations. Working under the auspices of the President's Council on Year 2000 Conversion, EPA worked closely with national trade associations in the water, waste, and chemicals sectors to promote awareness, encourage assessment and sector-wide surveys, develop guidance information, and assist in the development of contingency plans. EPA also provided targeted Y2K information to specific constituencies, including Tribes, small businesses, and non-English speaking groups.

In FY 1999, EPA met its goal to plan and track performance against annual goals and capture 100 percent of costs through the new Planning, Budgeting, Analysis, and Accountability (PBAA) structure, based on modified budget and financial accounting systems, a new accountability process, and new cost accounting mechanisms (APG 64). The Agency developed the Performance and Environmental Results System (PERS) to capture performance on the Agency's goals and measures and to ensure that senior managers have the information needed to monitor and improve EPA's performance. EPA is one of the first Federal agencies to have fully integrated its budget request with its annual performance plan and strategic framework of long-term goals.

The Office of Inspector General and the Office of the Chief Financial Officer have a process in place to ensure timely preparation and submission of EPA's audited financial statements. During FY 1999, EPA was among the Federal agencies awarded a clean opinion on its FY 1998 audited financial statements, demonstrating the Agency's effective financial practices and controls. EPA continues to improve its financial practices, such as reducing customer burden through reinvention and better use of technology. For example, in FY 1999 EPA greatly reduced the overhead costs of making payments by increasing the use of electronic funds transfer.

Increased Use of Electronic Funds Transfer (EFT) Payments to Reduce Overhead Costs



In addition to participating in the Agency-wide accountability process, several EPA Regional offices began implementing planning and accountability approaches to monitor contributions to Agency-wide progress toward environmental goals. In FY 1999, several Regions developed and implemented computer-based systems to monitor performance and support Regional management decision-making. Features of these systems include the ability to display trend data and track the status of quarterly budget commitments. Regional managers use the accountability process to examine progress and make required course corrections.

The Agency has invested in human resources to ensure that it has the scientific and technological skills needed for the future and that the workforce reflects the talents and perspectives of a growing multi-cultural society. EPA's strategy is aimed at attracting, recruiting, and developing employees who can address the critical environmental issues of today and the future. An important FY 1999 achievement for human resources is the hiring of a second talented and diverse class of 20 interns through a highly competitive process. This class, 41 percent of whom are members of minority populations, is made up of top scholars in their fields.

Additionally, in FY 1999, EPA completed the Workforce Assessment Project, which identified the skills needed by its workforce as the Agency moves into the 21st century. Increasing employee competencies is an integral element of a comprehensive, inclusive strategy designed to yield an EPA



EPA's Workforce Assessment Project is a five-fold strategy in developing the Agency's workforce.

workforce prepared for the future. Supporting accomplishments include completion of seven leadership and high-performance organization pilots, the design of the mid-level and administrative support development programs, a new Human Resources Guide for Supervisors, and a new Individual Development Plan guide for use by current and future employees.

In FY 1999, EPA completed several actions to streamline the Agency's business practices and procedures while still ensuring their integrity. These accomplishments include the following:

- Adopting over 40 wide-sweeping management reforms to correct longstanding weaknesses in contracts management.
- Expanding the use of electronic contracting practices, including posting requests for proposals (RFPs) on the Internet, which resulted in savings of approximately \$30,000 per RFP or a total annual savings of \$6 million.
- Implementing contracting reforms to improve contractor performance, provide greater accountability, and save taxpayer dollars. Approximately 50 percent of EPA's contracts are now fixed price, and *15 percent of new awards are performance-based (exceeding the FY 1999 goal by 5 percent)* (APG 65).
- *Meeting the FY 1999 goal of implementing Phase I of the Integrated Grants Management*

System (IGMS) award module in each of the Regional Grants Management Offices. It has also been implemented in the Headquarter's office as well (APG 66), resolving potential Y2K issues and helping to make EPA's grant award system an automated, paperless, and efficient process.

- Awarding 69 Performance Partnership Grants (PPGs) totaling over \$227 million, which provide flexibility to States and Tribes in allocating resources to their top environmental priorities. To address concerns recently identified by the Office of Inspector General, the Agency will include a review of PPGs during Regional Management Oversight Reviews and include an assessment of the PPG program in the Regional Management Effectiveness Reviews.
- Eliminating more than 96 percent of the original backlog of 20,000 cases of assistance grant closeout, thus making significant progress in the post-award management and monitoring of assistance resources that represent over 50 percent of the Agency's budget. The Agency has made significant progress in carrying out its corrective action plans and as part of the FY 1999 Integrity Report, re-designated Grants Closeout and Oversight of Assistance Agreements from a material weakness to an Agency-level weakness.

Building Operations, Utilities, and New Construction

EPA's objective is to provide a safe, secure, and healthy work environment characterized by efficient and economical building operations, utilities, facilities, new construction, repairs, and pollution prevention improvements. For several years, EPA has pursued a strategy to improve, consolidate, and make energy-efficient its facilities and laboratories throughout the country. This strategy, in part, has provided the Agency with state-of-the-art working environments to better conduct research that positively affects public health and the environment.

In FY 1999, EPA completed 60 percent of construction at the new Research Triangle Park (RTP) facility, exceeding the goal of completing 50



Research Triangle Park (RTP), NC

percent of construction at its top priority laboratory project (APG 67). The new facility, which serves as the flagship for the Agency's research and sound science efforts, will replace seven leased facilities, resulting in savings of over \$100 million (30-year net present value) by eliminating expenditures for rent and the higher costs of operating aging, scattered facilities.

The continued renovation of the Washington, DC Federal Triangle complex and its subsequent occupancy form the cornerstone of EPA's objective to consolidate its Headquarters employees within a safe, secure, and healthy space that allows for efficient operation of Agency programs. *EPA and the U.S. General Services Administration (GSA) achieved 90 percent of the targeted 100 percent build-out of the Ariel Rios North Building, while the anticipated build-out of the Wilson Building did not occur at all. Because of this, EPA did not meet its target of moving 38 percent of Headquarters personnel to the new complex. In FY 1999, EPA succeeded in relocating 31 percent of Headquarters employees to the new complex and completing the targeted 50 percent of the base build-out of the Interstate Commerce Commission Building (APG 68).* The Agency is conducting a market survey, expected to be completed by mid FY 2000, of available space to house the remaining EPA employees.

Also in FY 1999, EPA completed construction of its Fort Meade Laboratory. This construction project enabled the Agency to consolidate operations from two other laboratories into one Federal

facility, increasing the cost-effectiveness of EPA's Region 3 laboratory operations.

EPA met its FY 1999 target to reduce energy consumption in three of its laboratories. The Agency continues to focus on those laboratories that consume the most energy and also is working with the Department of Energy and GSA to install solar technologies in EPA laboratories and Regional offices. For example, in the first award of its kind for the Agency, EPA selected an energy savings performance contractor to make improvements to the National Vehicle and Fuels Emissions Laboratory in Ann Arbor, Michigan. Construction on this project began in FY 1999, and the contractor will be paid based on resulting energy savings in the future.

Audit and Investigative Services

EPA's objective is to provide audit and investigative products and services that can help the Agency accomplish its mission. EPA's Office of Inspector General's (OIG) audit and advisory services promote economy, efficiency, and effectiveness in all of the Agency's business practices. The OIG investigates alleged fraud, waste, and abuse by EPA employees, contractors, and grantees and independently reports the results of these investigations to Congress. As part of its Agency-wide reinvention strategy, EPA's OIG is also establishing a dedicated program evaluation unit. All efforts under the audit and investigative services objective ensure that the Agency's financial systems, accounting statements, and performance information are accurate, reliable, and useful.

During FY 1999, EPA met its goal to provide objective, timely, and independent auditing and consulting services and completed 24 construction grant closeout audits, exceeding the target of 15 (APG 69). The OIG accomplished its goal by expanding its audit and advisory services to more closely correspond to the needs of its customers, clients, and stakeholders while potentially returning as much as five dollars for every dollar invested by taxpayers. The OIG's audits identified over \$81 million in questioned costs and recommended efficiencies.

FY 1999 Performance Profile: Office of Audit
(Promoting Efficiency and Effectiveness)

• Questioned Costs (Federal share)	\$79.3 Million
• Recommended Efficiencies	\$1.8 Million
• Costs Disallowed to be Recovered	\$36.3 Million
• Number of Reports Issued	460
• Customer Satisfaction Rate	75 Percent

The OIG's audit and advisory services also made over 60 recommendations for improving program business practices and results, including actions for the following:

- Improving monitoring and enforcement of air quality standards.
- Standardizing water quality monitoring and attainment strategies.
- Developing strategies to perform risk assessments of hazardous waste releases and quality evaluations of hazardous waste treatment.
- Expanding capacity to connect small communities to wastewater facilities.

EPA met its FY 1999 goal to provide objective, timely, and independent investigative services (APG 69) in order to detect and deter fraud, waste, or other improprieties involving the Agency. The OIG's investigations resulted in 73 prosecutive and administrative actions. EPA's OIG also opened 31 new contract and assistance agreement cases, bringing the total inventory of these cases to 125. The OIG referred nearly one-fourth (24 percent) of the investigations for action and closed or referred over half (54.2 percent) of the cases all within one year of initiation. From 1996 to 1999, EPA investigations resulted in fines, restitutions, and recoveries totaling over \$24 million.

FY 1999 Performance Profile: Office of Investigation
(Detecting and Deterring Fraud, Waste, and Abuse)

• Fines, Recoveries, and Savings	\$815,292
• Indictments	20
• Convictions	11
• Administrative Actions	35
• Civil Filings/Settlements	7

PROGRAM EVALUATION

In FY 1999, as part of its efforts to improve management services, EPA benchmarked its major financial management functions against public and private sector organizations, including industry top performers. The benchmarking study examined FY 1998 data on all EPA resource planning, accountability, and stewardship functions, including strategic planning, budgeting, financial management, financial services, analysis, accountability, and management. The study found that in comparison to other top organizations, EPA devotes a lower percentage of its workforce to financial management overhead. EPA's financial management costs are, however, higher than public and private sector averages largely because the Agency has not invested in efficient new information technology to reduce the overhead costs of its payroll and other major financial systems (see future milestones below). The public can contact EPA's Office of the Chief Financial Officer for a copy of this study.

CONCLUSIONS AND CHALLENGES

In FY 1999, EPA continued its progress toward becoming a model for leadership and management among Federal agencies. EPA still faces significant challenges, however, in reinventing and streamlining processes while ensuring sound management of its administrative and financial services:

- Ensuring that the EPA workforce possesses the scientific and technological skills needed to meet the challenges of the 21st century and that it reflects the talents and perspectives of a growing multi-cultural society.
- Developing more outcome-oriented performance measures through collaboration with the many players involved in achieving environmental results: States, Tribes, local governments, other Federal agencies, non-governmental organizations, industry, the regulated community, Congress, and the Office of Management and Budget.
- Working with environmental partners (States, Tribes, local governments, and industry) to improve the speed and user-friendliness of the Agency's customer assistance processes.

KEY MILESTONES FOR THE FUTURE

- In FY 2000, EPA will conduct a national evaluation of the Child Health Champion Community pilot to learn about community needs for protecting children's health.
- In FY 2000, EPA will develop the *Children's Health Valuation Handbook* based on the results of the March 1999 workshop on valuing children's health.
- In FY 2001, EPA will complete the RTP laboratory facility construction project, which will serve as a flagship for the Agency's research and sound science efforts.
- In FY 2001, EPA will finalize the implementation of a new payroll system that reduces processing costs and supports the Agency's reinvention and streamlining initiatives.

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Appendices

A—FY 1999 Summary of Performance

B—Acronyms and Abbreviations

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FY 1999 ANNUAL PERFORMANCE GOALS AND MEASURES

TABLE OF RESULTS

The following table includes the 69 annual performance goals and associated measures (APG/PM) as reported in EPA's FY 1999 Final Annual Plan. The APGs are numbered as follows: Goal 1 (1 - 7), Goal 2 (8 - 18), Goal 3 (19 - 20), Goal 4 (21 - 27), Goal 5 (28 - 37), Goal 6 (38 - 43), Goal 7 (44 - 49), Goal 8 (50 - 57), Goal 9 (58 - 61), and Goal 10 (62 - 69). When there is a significant difference between the planned targets and actual performance, the table includes an explanation of why the goal was not achieved or significantly over-achieved, and a description of the Agency's plans and schedules to meet an unmet goal in the future. The table also includes a brief explanation for why data for a particular APG are not available and the date of expected availability.

Annual Performance Goal and Measures	Planned	Actual	Explanation
GOAL 1 - Clean Air			
APG 1 - Eight additional areas currently classified as non-attainment will have the 1-hour ozone standard revoked because they meet the old standard.	8	10	EPA Regional offices revoked the 1-hour standard in ten areas, meeting EPA's 1999 goal. Based on the Circuit Court decision regarding the revised ozone standard, however, EPA has proposed to reinstate the 1-hour standard.
APG 2 - Deploy particulate matter 2.5 ambient monitors including: mass, continuous, speciation, and visibility resulting in a total of 1,500 monitoring sites.	1,500	1,110	In response to the Congressionally directed National Academy of Science study recommending that the mass portion of the monitoring network be more balanced with the continuous and speciation portion of the network, the number of mass monitoring sites deployed in FY 1999 was reduced from 1,500 to 1,110.
APG 3 - Identify and evaluate at least two plausible biological mechanisms by which particulate matter (PM) causes death and disease in humans.	2	2	
APG 4 - Reduce air toxic emissions by 12% in FY 1999, resulting in cumulative reduction of 25% from 1993 levels.	12%		The Agency is on track to achieve the annual performance goal. Estimates for FY 1999 indicate a 14% reduction in air toxic emissions, resulting in a cumulative reduction of 27% from 1993 levels. Final data for FY 1999 will be published in 2002.
APG 5 - Complete health assessments for five air toxics as high priority.	5	4	Dose-response assessments for dichloropropene, cadmium, ethylene glycol, monobutyl ether, and acetonitrile were completed in FY 1999. The fifth assessment, for vinyl chloride, was delayed and will be completed in FY 2000. This delay will not negatively affect achievement of the strategic objective.

Annual Performance Goal and Measures	Planned	Actual	Explanation
APG 6 - Certify that 14 of the 58 estimated remaining nonattainment areas have achieved the National Ambient Air Quality Standards (NAAQS) for carbon monoxide, sulfur dioxide, or lead. <u>Performance Measures</u> - Regions take final action on CO redesignation. - Regions take final action on SO2 redesignation. - Regions take final action on lead redesignation.	14 7 5 2	13 8 3 2	Thirteen of the 58 estimated remaining nonattainment areas have achieved the NAAQS for carbon monoxide, sulfur dioxide, or lead. The performance target was set at an approximate level. The performance is not expected to impede the achievement of the strategic objective.
APG 7 - Maintain 4 million tons of sulfur dioxide (SO2) emissions reduction from utility sources, and maintain 300,000 tons of nitrogen oxides (NOx) reduction from coal-fired utility sources.	4,000,000 300,000		The Agency is on track to achieve the annual performance goal. End-of-year data will not be available until late 2000.
GOAL 2 - Clean Water			
APG 8 - EPA will issue and begin implementing two protective drinking water standards for high-risk contaminants, including disease-causing micro-organisms (Stage I Disinfection/ Disinfection By-products and Interim Enhanced Surface Water Treatment Rules).	2	2	
APG 9 - 89% (increase of 1% over 1998) of the population served by community water systems will receive drinking water meeting all health-based standards in effect as of 1994, up from 83% in 1994.	1%	3%	The cumulative total is 91%, which is also the FY 2000 annual performance goal.
APG 10 - 4,400 community water systems will be implementing programs to protect their source water (an increase of 1,650 systems over 1998).	1,650	8,261	In FY 1999, community water systems' efforts in implementing programs to protect their source water resources included not only steps 4 and/or 5 of the wellhead protection program, but also the completion of steps 1-3 that provide the basis for implementation activities. This resulted in a larger number of systems being counted than originally forecast for a cumulative total of 11,011.

Annual Performance Goal and Measures	Planned	Actual	Explanation
APG 11 - EPA will develop critical dose-response data for disinfectant by-products (DBPs), waterborne pathogens, and arsenic for addressing key uncertainties in the risk assessment of municipal water supplies.	9/30/99	9/30/99	EPA produced data on the first urban study on microbial gastrointestinal disease, as well as hazard identification and screening studies on the reproductive and developmental effects of selected disinfectant by-products.
APG 12 - As part of the Clean Water Action Plan, all States will be conducting or have completed unified watershed assessments, with support from EPA, to identify aquatic resources in greatest need of restoration or prevention activities.	50	56	Actual performance results include both States and Territories. In addition, 84 Tribes are conducting or have completed unified watershed assessments.
APG 13 - EPA will provide funding to restore wetlands and river corridors in 30 watersheds that meet specific "Five Star Project" criteria relating to diverse community partnerships (for a cumulative total of 44 watersheds).	30	46	The baseline for this goal has been corrected from 14 to 11 (for a cumulative target of 41 watersheds). The Agency exceeded the goal due to difficulty in setting a precise target. The program calls for a few large grants to be passed through as small sub-awards based on a competition. Selected sub-grantees' average project costs were lower than expected, resulting in the opportunity for more sub-awards.
APG 14 - EPA will provide data and information for use by States and Regions in assessing and managing aquatic stressors in the watershed, to reduce toxic loadings and improve ecological risk assessment.	9/30/99	9/30/99	EPA completed a study, produced three publications on "knowledge-based approaches" to watershed assessments, and produced a publication on ecosystem classification and mapping.
APG 15 - Another 3.4 million people will receive the benefits of secondary treatment of wastewater, for a total of 179 million.	3,400,000	3,400,000	The cumulative total is 179 million people.
APG 16 - More than 220 communities will have local watersheds improved by controls on combined sewer overflows (CSO) and storm water.	220	513	EPA is not yet able to measure actual improvement in watersheds; therefore this goal has been dropped after FY 1999. A count of communities that implemented requirements in Storm Water Phase I permits and/or CSO Long-Term Control Plans was used as a surrogate indicator of progress. Using this measure resulted in a significantly larger number of communities meeting the goal than originally forecast.

Annual Performance Goal and Measures	Planned	Actual	Explanation
APG 17 - In support of the Clean Water Action Plan, ten additional States will upgrade their non-point source programs, to ensure that they are implementing dynamic and effective non-point source programs that are designed to achieve and maintain beneficial uses of water.	10	11	The cumulative total is 13 States.
APG 18 - By 2003: Deliver support tools, such as watershed models, enabling resource planners to select consistent, appropriate watershed management solutions and alternative, less costly wet-weather flow control technologies.			The target year is 2003 to achieve the performance goal. In FY 1999, EPA completed a peer-reviewed publication of wet-weather flow disinfection studies, among other research reports.
GOAL 3 - Safe Food			
<p>APG 19 - Decrease adverse risk from agricultural pesticides from 1995 levels and assure new pesticides that enter the market are safe for humans and the environment.</p> <p><u>Performance Measures</u></p> <ul style="list-style-type: none"> -Register safer chemicals and biopesticides. -Tolerances - New Uses - Special Registrations - Inerts - Me-toos - Amendments - New Chemicals 	<p>15</p> <p>95</p> <p>90</p> <p>370</p> <p>45</p> <p>600</p> <p>2,000</p> <p>9</p>	<p>19</p> <p>351</p> <p>681</p> <p>455</p> <p>109</p> <p>1,022</p> <p>3,586</p> <p>7</p>	<p>EPA is currently engaged in efforts to improve environmental indicators to address performance measurement shortcomings associated with this goal. Pending availability of these indicators, the Agency is using a variety of pesticide registration activities as surrogate measures.</p> <p><i>NOTE:</i> Planned performance targets are estimates based on submissions from prior years. In some cases, work process changes have enabled the Agency to increase its efficiency, thereby increasing its output. In others, the disparity between planned and actual values was amplified by a change in the way certain activities are counted. Two examples are listed below:</p> <p><u>Tolerances:</u> In FY 1999, EPA changed the way it counts tolerance activities to more accurately reflect the work performed. Previously, the Agency counted tolerance petitions submitted by industry. Since a single petition may contain multiple commodities for which a tolerance assessment must be done, the new system counts tolerances set for each commodity.</p> <p><u>New Uses:</u> In FY 1999, the Agency also changed the way it approaches the new use requests it receives for a given pesticide. Previously, EPA processed new use requests on a crop-by-crop basis (e.g., oranges). When appropriate, the Agency now conducts additional review of relevant studies, and approves new uses on an entire crop group (e.g., oranges, lemons, tangerines, grapefruit, and limes). This has resulted in an increase in the number of new uses.</p>

Annual Performance Goal and Measures	Planned	Actual	Explanation
APG 20 - Under pesticide re-registration, EPA will reassess 19% of the existing 9,700 tolerances (cumulative 33%) for pesticide food uses to meet the new statutory standards of "reasonable certainty of no harm."	1,850	1,445	A primary component in achieving EPA's FY 1999 performance goal involved getting interim risk mitigation on many organo-phosphate pesticides. Internal process changes to broaden public participation delayed some decisions, affecting FY 1999 performance. These changes, however, have not impacted the Agency's ability to meet statutory requirements. EPA exceeded the cumulative statutory target of evaluating 33% of the 9,721 existing pesticide food tolerances by August 1999. As of September 30, 1999, EPA had completed 3,430 reassessments (35%).
GOAL 4 - Pollution Prevention			
APG 21 - Protect homes, communities, and workplaces from harmful exposures to pesticides and related pollutants through improved cultural practices and enhanced public education, resulting in a reduction of 15% cumulative (1994 reporting base) in the incidences of pesticide poisonings reported nationwide. <u>Performance Measures</u> - Incidences of pesticide poisonings - Environmental Stewardship Strategies - Manage pesticides with high probability to leach/persist in groundwater - Labor population will be adequately trained (cumulative percentage of pesticide applicators certified)	15% 42* 10% 38%	No Data 69* 0 48%	<p>Data now available do not allow a reliable estimate of the magnitude or trend in the national incidence of pesticide poisonings. EPA currently is engaged in an effort to improve its environmental indicators to address the performance measurement shortcomings associated with this goal.</p> <p><u>Pesticide Poisonings:</u> EPA has considered data available from Poison Control Centers, from the State of California and Washington, and from the National Institute for Occupational Safety and Health (NIOSH) SENSOR project. These different data sets suggest different trends and all are thought to be subject to significant under-reporting. EPA will consider the likelihood of improved data in the near-term and will evaluate whether to change its performance measure in this area.</p> <p><u>Environmental Stewardship Strategies:</u> In FY 1999, the Pesticide Environmental Stewardship Program phased in a new, streamlined approach to the strategy submittal and approval process, resulting in a larger number of submittals and approvals.</p> <p><u>Management of pesticides w/high probability to leach/persist in groundwater:</u> The target was not met due to a delay in the publication of the Groundwater Management Plan regulation.</p> <p>*NOTE: Planned target and actual performance represent cumulative totals.</p>
APG 22 - Complete the building of a lead-based paint abatement certification and training program in 50 States to ensure significant decreases in children's blood lead levels by 2005 through reduced exposure to lead-based paint.			Through FY 1999, EPA continued building the lead-based abatement training and certification program by approving programs in 28 States, one territory, and the District of Columbia. EPA also approved programs for two Tribes. EPA had hoped that more States would have completed the process of picking up the program by the end of FY 1999. Two additional States have picked up the program since the end of FY 1999 and others are expected to pick it up during the remainder of FY 2000. EPA is, however, reassessing plans for managing the training and certification program in the future.

Annual Performance Goal and Measures	Planned	Actual	Explanation
<u>Performance Measures</u> - Develop State programs for the training, accreditation and certification of lead-based paint abatement professionals. - A Federal training, accreditation and certification program will be established and administered in States which choose not to seek approval from EPA to administer.	35	28	
APG 23 - Ensure that of the approximately 1,800 new chemicals and micro-organisms submitted by industry each year, those that are introduced in commerce are safe to humans and the environment for their intended uses.	1,800	1,717	NOTE: Planned performance targets are estimates based on the number of industry submissions from prior years. The Agency met its goal to review all new chemicals and organisms submitted by industry.
APG 24 - 700,000 additional people will live in healthier residential indoor environments.	700,000		End-of-year results are expected in December 2000. Trend data suggest that significant progress has been made toward meeting the goal.
APG 25 - The quantity of Toxic Release Inventory pollutants released, treated, or combusted for energy recovery will be reduced by 200 million pounds, or 2% from 1998 reporting levels.	200 M lb. Reduction		FY 1999 data will not be available until 2001 due to time lags associated with reporting and analysis. A 1.1 billion pound increase in 1997 (most current data available) suggests that the goal will not be met. The FY 1999 performance goal was deficient in not taking into account fluctuations in industrial production. The Agency adjusted this performance measure for FY 2001 to account for these fluctuations.
APG 26 - Maintain levels (for a cumulative total of 28% or 62 million tons) of municipal solid waste diverted from land filling and combustion, and maintain per capita generation of RCRA municipal solid waste at 4.3 pounds per day.	28% 4.3 lb per day		Analysis of data to determine national recycling rates no longer occurs annually. The next analysis is expected in 2001. Data for 1997 indicate that 28% of municipal solid wastes (MSW) was diverted from land filling and combustion. Per capita MSW generation was at 4.4 pounds per day, a slight increase over the planned target attributed to the robust economy.
APG 27 - 10% of Tribal environmental baseline information will be collected and ten additional Tribes (cumulative total of 45) will have Tribal/ EPA environmental agreements or identified environmental priorities.	10% 10	10% 11	EPA made faster progress (cumulative total 46) than expected in getting Tribal/EPA environmental agreements in place and/or in identifying environmental priorities.

Annual Performance Goal and Measures	Planned	Actual	Explanation
GOAL 5 - Waste Management			
APG 28 - EPA and its partners will maintain the pace of cleanups by completing construction at 85 additional Superfund sites (for a cumulative total of 670 construction completions with a target of 925 construction completions in 2002).	85	85	The FY 2002 target has been adjusted to 900.
APG 29 - Obtain potentially responsible party (PRP) commitments for 70% of the work conducted at new construction starts at non-Federal facility sites on the NPL and emphasize fairness in the settlement process.	70%	80%	
APG 30 - Ensure trust fund stewardship by recovering cost from PRPs when EPA expends trust fund monies. Address cost recovery at all National Priority List (NPL) and non-NPL sites with a statute of limitations on total past costs equal to or greater than \$200,000.	100%	99%	The deviation from the target level was minimal. Performance is not expected to negatively impact the achievement of the strategic objective.
APG 31 - 83 (for a cumulative total of 238 or 14%) of high priority RCRA facilities will have human exposure controlled and 45 (for a cumulative total of 119 or 7%) will have groundwater releases controlled.	83	162	Initial targets and baseline data for this goal were based on estimates that have since been refined by delegated State programs and EPA Regions. FY 1999 accomplishments reflect State and EPA efforts to improve baseline and reporting data.
	45	188	
APG 32 - Complete 22,000 Leaking Underground Storage Tank (LUST) cleanups.	22,000	25,678	The goal was exceeded due to increased emphasis by State program managers to complete cleanups and improve data management.
APG 33 - EPA will fund Brownfields site assessments in 100 more communities, thus reaching 300 communities by the end of 1999.	100	80	FY 1998 data showed greater than expected accomplishments in funding activities for individual communities through cooperative agreements. To achieve the goal of reaching a total of 300 communities by the end of FY 1999, only 73 new cooperative agreements were necessary. By awarding 80 new pilots, EPA exceeded its goal and reached 307 communities by the end of FY 1999.

Annual Performance Goal and Measures	Planned	Actual	Explanation
APG 34 - Demonstrate and verify the performance of 18 innovative technologies by 2001, emphasizing remediation and characterization of groundwater and soils.	18 by 2001	7 in FY 1999	EPA, in cooperation with the private sector and other Federal agencies, completed demonstrations of seven innovative technologies in FY 1999, and is on schedule to achieve the performance goal of 18 by 2001.
APG 35 - 122 hazardous waste management facilities (for a cumulative total of 61% of 3,380 RCRA facilities) will have permits or other controls in place.	122		The number of additional hazardous waste management facilities with permits or other approved controls in place cannot be accurately reported at this time. This delay is primarily due to verifying the accuracy of reporting that goes beyond the historical unit-specific recording of permit determinations, and ensuring that these data are properly reflected in EPA's national data system by delegated States and Regions. EPA expects to have data available by the end of FY 2000.
APG 36 - 190 additional facilities will be in compliance with spill prevention, control and countermeasure (SPCC) provisions of the oil pollution regulations (for a cumulative total of 490 additional facilities since 1997).	190	774	This goal was significantly exceeded in large part because of the success of EPA's Region 6 pilot program to correct violations and ensure compliance. Pilot implementation will be expanded in FY 2000.
APG 37 - Complete prototype model for assessing cumulative exposure-risk assessment integrating the environmental impact of multiple chemicals through multiple media and pathways.	9/30/99	9/30/99	
GOAL 6 - Reducing Risks			
APG 38 - One additional water/wastewater project along the Mexican Border will be certified for design-construction.	1	9	The significant success toward this goal is the result of efforts by parties in both Mexico and the United States to ensure that residents have adequate water and wastewater treatment facilities.
APG 39 - Reduce U.S. greenhouse emissions by 35 million metric ton carbon equivalent (MMTCE) per year through partnerships with businesses, schools, State and local governments, and other organizations.	35		While final data covering all of FY 1999 will not be available until Spring 2000, current estimates indicate that EPA may exceed this goal by about 15%.

Annual Performance Goal and Measures	Planned	Actual	Explanation
APG 40 - Conduct preliminary assessment of consequences of climate change at three geographical locations: (Mid-Atlantic, Gulf Coast, and upper Great Lakes).	3	2	The Gulf Coast Regional Assessment, delayed due to difficulties in obtaining peer review acceptance of the project proposal, is now underway. The performance level is not expected to impede the achievement of the strategic objective.
APG 41 - Ensure that domestic consumption of class II HCFCs will be restricted to below 208,400 MTs and domestic exempted production and import of newly produced class I CFCs and halons will be restricted to below 130,000 MTs.	<208,400 <130,000		Based on results in the first three quarters of FY 1999, EPA was on track to meet this goal. Calculations for the total data in FY 1999 will be available in Spring 2000.
APG 42 - Obtain international agreement on criteria for selecting Persistent Organic Pollutants (POPs) to be covered in a new global POPs treaty, and on capacitybuilding activities to support the convention's implementation.	9/30/99		EPA obtained substantial international agreement on criteria for selecting Persistent Organic Pollutants to be covered in a new global POP's treaty. Complete agreement is anticipated by the end of March. No agreement has been reached on capacity building to support the treaty's implementation. Resolution for both issues is required by the end of negotiations in December 2000.
APG 43 - Deliver 30 international training modules; implement six technical assistance/technology dissemination projects; implement five cooperative policy development projects; and disseminate information products on U.S. environmental technologies and techniques to 2,500 foreign customers.	30 6 5 2,500	16 6 6 2,500	The annual performance goal for developing and delivering 30 training modules to host countries was not met. The Agency completed and delivered 16 of the 30 training modules. The remaining 14 modules were not completed due to problems in host countries (i.e., political and economic unrest, U.S. Government sanctions, and inability to provide resource share.)

Annual Performance Goal and Measures	Planned	Actual	Explanation
GOAL 7 - Right-to-Know			
APG 44 - The Agency will streamline and improve the information reporting process between State partners and EPA by increasing the number of participants in the OneStop Reporting Program (for a total of 29).	8	4	EPA was able to award only four new OneStop grants (for a total of 25) primarily because candidate States had not demonstrated the required level of systems integration. To remedy this, EPA has added a technology transfer activity to help additional States meet the OneStop reporting eligibility criteria.
APG 45 - Provide over 100 grants to assist communities with understanding and address Environmental Justice issues.	100	100	
APG 46 - Process 110,000 facility chemical release reports, publish the Toxic Release Inventory (TRI) Data Release Report, and provide improved information to the public about TRI chemicals, enhancing community right-to-know and efficiently processing information from industry.	110,000	117,171	
APG 47 - Increase compliance with right-to-know reporting requirements by conducting 1,300 inspection and undertaking 200 enforcement actions.	1,300 200	1,034 285	EPA targeted its inspections to the most likely noncompliers, thus surpassing the target for necessary enforcement actions while completing fewer inspections than projected.
APG 48 - EPA will partner with the States in implementation activities that will ensure all public water systems- large, medium, and especially small- are informed of both the requirements of the consumer confidence report regulation and implementation tools for complying with this rule.	50	50	

Annual Performance Goal and Measures	Planned	Actual	Explanation
APG 49 - By 1999, complete five to seven monitoring pilot projects in Environmental Monitoring for Public Access and Community Tracking (EMPACT) cities, implement timely and high quality environmental monitoring technology in five to seven EMPACT cities.	5-7	8	
GOAL 8 - Sound Science			
APG 50 - Complete and evaluate a multi-tiered ecological monitoring system for the Mid-Atlantic region and provide select land cover and aquatic indicators for measuring status and trends.			Target year is 2001 to achieve the performance goal. In FY 1999, EPA researchers completed the first stage of the Environmental Monitoring and Assessment Program; proving that EPA can costeffectively monitor the condition of ecosystems at a regional scale.
APG 51 - Analyze existing monitoring data for acid deposition and Ultraviolet-B (UVB) and implement a multiple site UVB monitoring system for measuring status and trends.	9/30/99	9/30/99	
APG 52 - Provide ecological risk assessment case studies for two watersheds, final guidelines for reporting ecological risk assessment, and ecological risk assessment guidance and support.	9/30/99	9/30/99	
APG 53 - Produce first generation exposure models describing residential exposure to pesticides.	9/30/99	9/30/99	
APG 54 - Develop and verify innovative methods and models for assessing the susceptibilities of population to environmental agents, aimed at enhancing risk assessment and management strategies and guidelines.			Target year is 2008 to achieve the performance goal. In FY 1999, EPA awarded seven new grants for studies on a variety of topics related to the risk to children's health from environmental pollutants.

Annual Performance Goal and Measures	Planned	Actual	Explanation
APG 55 - Initiate field exposure study of children to two endocrine disrupting chemicals.	9/30/99	9/30/99	
APG 56 - Improve Computational Efficiency of Fine Particulate Model by 25%.	9/30/99	9/30/99	
APG 57 - A total of 50 Project eXcellence and Leadership (XL) projects will be in development or implementation, an increase of 23 over 1998.	23	24	The cumulative total is 51.
GOAL 9 - Credible Deterrent			
APG 58 - Deter noncompliance by maintaining levels of field presence and enforcement actions, particularly in high risk areas and/or where populations are disproportionately exposed. In 1999, EPA will conduct 15,000 inspections and undertake 2,600 enforcement actions.	15,000 2,600	21,410 3,935	
APG 59 - Target high priority areas for enforcement and compliance assistance and complete baseline data assessment in major databases needed to measure quality of key indicators of compliance. The Agency will identify five high priority areas and improve two data systems.	5 2	7 2	
APG 60 - Assist States and Tribes with their enforcement and compliance assurance and incentive programs. EPA will provide specialized assistance and training, including 83 courses, to State and Tribal officials to enhance the effectiveness of their programs.	83	218	Actual deliveries exceeded the projected target because EPA emphasized capacity-building and provide more training opportunities for State, local, and Tribal professionals than originally projected, particularly in topic areas such as basic inspector training, penalty calculation courses, and environmental crimes training for Tribal officials.

Annual Performance Goal and Measures	Planned	Actual	Explanation
APG 61 - Increase regulated community's use of compliance incentives and their understanding of, and ability to comply with, regulatory requirements. The Agency will continue to operate nine small business compliance assistance centers and will complete sector notebooks, guides, and other outreach materials begun in FY 1998.	9	9	
GOAL 10 - Effective Management			
APG 62 - By the end of 1999, evaluate five EPA regulations to ensure they are protective of children's health.	5	0	The Agency is currently working to evaluate eight regulations and/or regulatory areas selected based on recommendations by the Children's Health Protection Advisory Committee. Evaluations of the eight regulations and/or regulatory areas are expected to be completed in FY 2001.
APG 63 - All mission-critical systems will continue to support core Agency functions without interruption across Year 2000 date change.	100%	100%	
APG 64 - By the end of 1999, the Agency can plan and track performance against annual goals and capture 100% of costs through the new PBAA structure, based on modified budget and financial accounting systems, a new accountability process, and new cost accounting mechanisms.	9/30/99	9/30/99	
APG 65 - EPA will improve the quality, effectiveness and efficiency of EPA's acquisition and contract management process by completing 10% of contracts utilizing performance-based statement of works.	10%	15%	

Annual Performance Goal and Measures	Planned	Actual	Explanation
APG 66 - Implement Phase 1 of the Integrated Grants Management System (IGMS) award module in all Regions.	10	11	EPA implemented the IGMS award module in each of its ten Regional Offices as well as the Headquarter's Grants Management Office.
APG 67 - Complete at least 50% of construction of the consolidated research lab at Research Triangle Park, North Carolina.	50%	60%	
APG 68 - Continue renovation of the new consolidated headquarters complex, completing 100% build out of the Ariel Rios north and Wilson Building, and 50% of the Interstate Commerce Commission, and moving 38% of EPA personnel from vacated spaces to the new consolidated complex.	100% 50% 38%	90% 50% 31%	EPA's decision to relinquish the Wilson Building to the District of Columbia Government has delayed achievement of the 1999 performance goal. EPA is conducting a market survey, to be completed by mid-FY 2000, of available space to house the remaining EPA Headquarter's employees.
APG 69 - In 1999, the OIG will provide objective, timely and independent auditing, consulting, and investigative services through such actions as completing 15 construction grant closeout audits.	15	24	The OIG exceeded its goal for completing construction grant audits due to audits that did not take as long as anticipated, substitution of projects that were not as resource intensive, and initial risk assessments that did not reveal vulnerabilities warranting a full audit, thus allowing more audits to be closed upon issuance than anticipated.

ACRONYMS AND ABBREVIATIONS

APG	Annual Performance Goal
APR	Annual Performance Report
BOSC	Board of Scientific Counselors
CAA	Clean Air Act
CCR	Consumer Confidence Report
CEC	Commission for Environmental Cooperation
CEIS	Center for Environmental Information and Statistics
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFC	Chlorofluorocarbon
CO	Carbon Monoxide
CPM	Core Performance Measure
CRTK	Chemical Right-to-Know
CSI	Common Sense Initiative
CWAP	Clean Water Action Plan
CWSRF	Clean Water State Revolving Fund
DHHS	Department of Health and Human Services
DOE	Department of Energy
ECOS	Environmental Council of the States
EDC	Endocrine Disrupting Chemical
EMAP	Environmental Monitoring and Assessment Program
EMPACT	Environmental Monitoring for Public Access and Community Tracking
EPA	Environmental Protection Agency
EPCRA	Emergency Planning and Community Right-to-Know Act
ETV	Environmental Technology Verification
FDA	Food and Drug Administration
FQPA	Food Quality Protection Act
FY	Fiscal Year
GAO	General Accounting Office
GAP	General Assistance Program
GCRP	Global Change Research Program
GIS	Geographic Information System
GPRA	Government Performance and Results Act
GSA	General Services Administration
HEPA	High Efficiency Particulate Air
HUD	Department of Housing and Urban Development
IRIS	Integrated Risk Information System
IWI	Index of Watershed Indicators

LUST	Leaking Underground Storage Tank
MIMS	Multimedia Integrated Modeling System
MSW	Municipal Solid Waste
MTBE	Methyl Tertiary Butyl Ether
NAAQS	National Ambient Air Quality Standards
NARAP	North American Regional Action Plan
NAC	National Advisory Committee
NAFTA	North American Free Trade Agreement
NEP	National Estuary Program
NEPA	National Environmental Policy Act
NEPPS	National Environmental Performance Partnership System
NHANES	National Health and Nutrition Evaluation Survey
NO ₂	Nitrogen Dioxide
NO _x	Nitrogen Oxide
NOAA	National Oceanic and Atmospheric Administration
NPDES	National Pollutant Discharge Elimination System
NPL	National Priorities List
NPS	Non-Point Source
NRDC	Natural Resources Defense Council
NTI	National Toxics Inventory
O ₃	Ozone
ODS	Ozone-Depleting Substance
OECD	Organization for Economic Cooperation and Development
OEI	Office of Environmental Information
OIG	Office of the Inspector General
OMB	Office of Management and Budget
OP	Organophosphate
P2	Pollution Prevention
Pb	Lead
PBT	Persistent, Bioaccumulative, and Toxic
PCB	Polychlorinated Biphenyl
PERS	Performance and Environmental Results System
PM	Particulate Matter
PPA	Performance Partnership Agreement
PRP	Potentially Responsible Party
RCRA	Resource Conservation and Recovery Act
REI	Reinventing Environmental Information
RFP	Request for Proposal
RGI	Regional Geographic Initiative
RTP	Research Triangle Park

SAB	Science Advisory Board
SAMI	Southern Appalachian Mountains Initiative
SDWIS	Safe Drinking Water Information System
SITE	Superfund Innovative Technology Evaluation
SO ₂	Sulfur Dioxide
STAR	Science to Achieve Results
TEA-21	Transportation Equality Act for the 21st Century
TMDL	Total Maximum Daily Load
TRI	Toxics Release Inventory
TSCA	Toxic Substances Control Act
USDA	Department of Agriculture
UST	Underground Storage Tank
UV	Ultraviolet
VOC	Volatile Organic Compound

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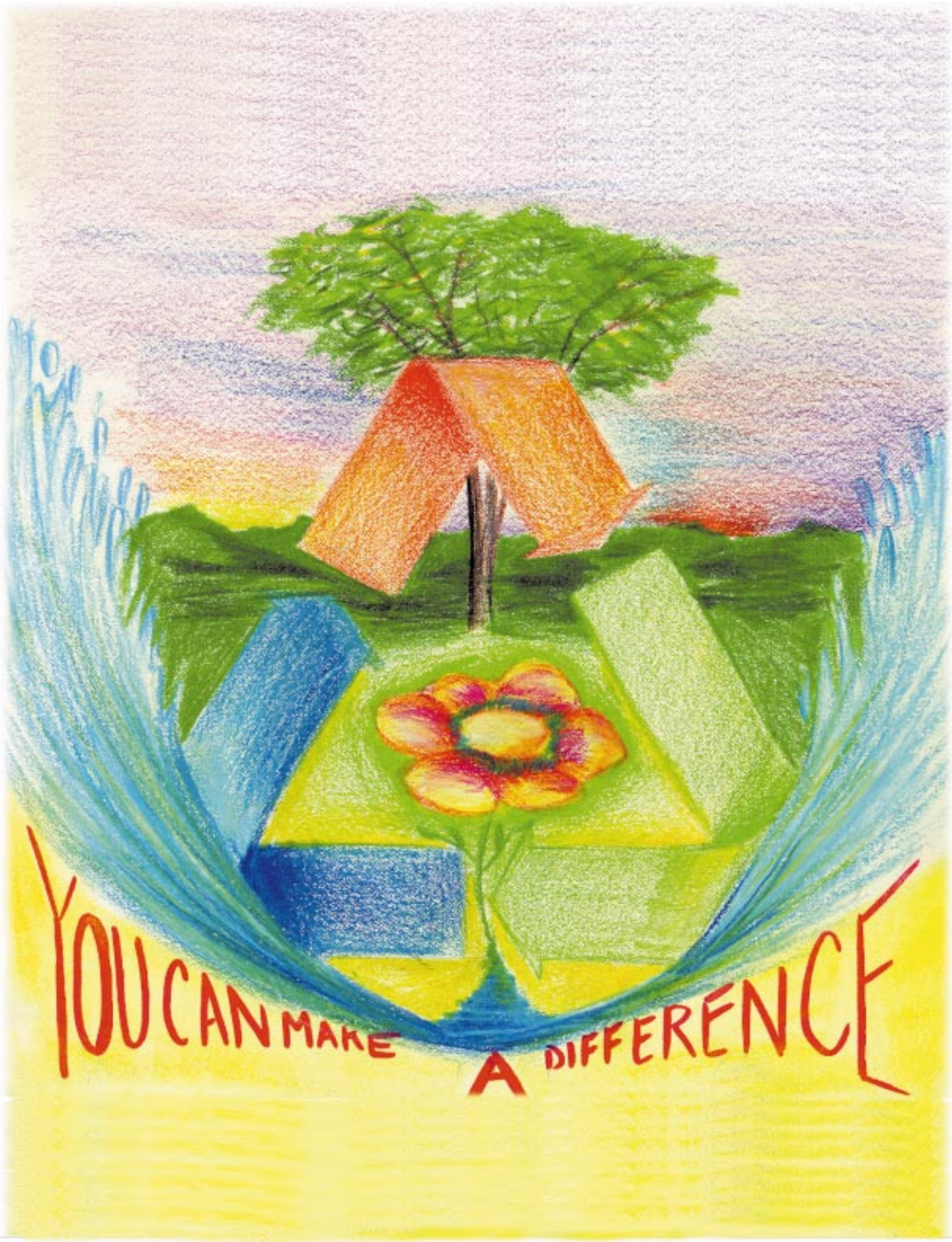
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