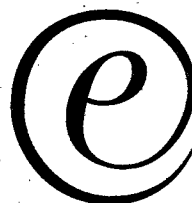




# Partnerships In Preventing Pollution

## A Catalogue Of The Agency's Partnership Programs

PARTNERS FOR THE



ENVIRONMENT



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## A. INTRODUCTION

The purpose of this document is to provide a reference guide to a number of the U.S. Environmental Protection Agency's (EPA) voluntary pollution prevention programs. This document is an expansion of a document produced in 1994 by the Global Environmental Management Initiative (GEMI), the GEMI Reference to EPA Voluntary Programs.

Over the last several years, an important change has been taking place in our national strategy for protecting the environment. Through an array of partnership programs that we collectively refer to as Partners for the Environment, EPA is demonstrating that voluntary goals and commitments achieve real environmental results in a timely and cost-effective way. In addition to traditional approaches to environmental protection, EPA is building cooperative partnerships with a variety of groups, including small and large businesses, citizen groups, state and local governments, universities and trade associations.

The results of the Partners for the Environment effort are impressive. Thousands of organizations are working cooperatively with EPA to set and reach environmental goals such as conserving water and energy, and reducing greenhouse gases, toxic emissions, solid wastes, indoor air pollution, and pesticide risk. Our partners are making pollution prevention a central consideration in doing business. Partnership also means that we are working cooperatively with the private sector to provide stakeholders with effective tools to address environmental issues. These partners are achieving measurable environmental results often more quickly and with lower costs than would be the case with regulatory approaches. EPA views these partnership efforts as key to the future success of environmental protection.

This document describes EPA's current voluntary pollution prevention programs. The document describes the following programs: 33/50, AgSTAR, Climate Wise, Coalbed Methane Outreach Program, Common Sense Initiative, Design for the Environment, Energy Star Buildings, Energy Star Residential Programs, Energy Star Office Equipment, Energy Star Transformer Program, Environmental Accounting, Environmental Leadership Program, Green Chemistry Program, Green Lights, Indoor Environments Program, Landfill Methane Outreach Program, Natural Gas Star Program, Pesticide Environmental Stewardship Program (PESP), Project XL, Ruminant Livestock Methane Program, State and Local Outreach Program, Transportation Partners, U.S. Initiative on Joint Implementation (USIJI), Voluntary Aluminum Industrial Program (VAIP), Voluntary Standards Network, Waste Minimization National Plan, Water Alliances for Voluntary Efficiency (WAVE), and WasteWiSe.

This document contains contacts for all the programs described here. Please feel free to contact these programs if you would like more information. We hope you find this document useful and would like to hear any comments you may have about it or about EPA's partnership programs in general. You may direct any comments on this document to the following address: Michelle Price, Office of Pollution Prevention and Toxics (7408), 401 M Street, SW, Washington, DC 20460.

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## B. ABBREVIATIONS USED IN THIS DOCUMENT

APPD	Atmospheric and Pollution Prevention Division
BMP	Best Management Practices
Bcf	Billion Cubic Feet
BPPD	Biopesticides and Pollution Prevention Division
CAA	Clean Air Act
CCAP	Climate Change Action Plan
CSI	Common Sense Initiative
DOE	Department of Energy
DfE	Design for the Environment
EMS	Environmental Management System
EPACT	Environmental Policy Act
ESAP	Environmental Self-Assessment Program
FDA	Food and Drug Administration
GAO	General Accounting Office
GEMI	Global Environmental Management Initiative
IAQ	Indoor Air Quality
IPM	Integrated Pest Management
ICC	International Chamber of Commerce
IRR	Internal Rate of Return
LMOP	Landfill Methane Outreach Program
MOU	Memorandum of Understanding
MMT	Million Metric Tons
MEC	Model Energy Code
OPP	Office of Pesticides Programs
OPPE	Office of Policy, Planning, and Evaluation
PESP	Pesticide Environmental Stewardship Program
SBA	Small Business Administration
TQM	Total Quality Management
TSCA	Toxic Substances Control Act
USDA	U.S. Department of Agriculture
WAVE	Water Alliances for Voluntary Efficiency

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## C. EPA VOLUNTARY INITIATIVES PROGRAM CONTACTS

For more information on EPA voluntary programs, please contact the following people:

### 33/50

TSCA Assistance Hotline  
Phone: 202-554-1404  
Monday through Friday  
8:30 a.m. - 5:00 p.m. EST.

David Sarokin, 33/50 Director  
Office of Pollution Prevention & Toxics  
U.S. EPA (7408)  
401 M Street, SW  
Washington, DC 20460  
Phone: 202-260-6907  
Fax: 202-401-8142

### AgSTAR

Kurt Roos  
U.S. EPA (6202J)  
401 M Street, SW  
Washington, DC 20460  
Phone: 202-233-9041  
Fax: 202-233-9569

### Climate Wise

Pamela Herman, Climate Wise Co-Director  
U.S. EPA (2126)  
401 M Street, SW  
Washington, DC 20460  
Phone: 202-260-4407  
Fax: 202-260-0512

Gerald Kotas  
U.S. Department of Energy  
Office of Energy Efficiency &  
Renewable Energy  
1000 Independence Ave.  
Washington, DC 20585  
Phone: 202-586-9220  
Fax: 202-586-9260

### Coalbed Methane Outreach Program

Karl Schultz  
U.S. EPA (6202J)  
401 M Street, SW  
Washington, DC 20460  
Phone: 202-233-9468

### Common Sense Initiative

Katherine Brown  
U.S. EPA  
401 M Street, S.W.  
Washington, DC 20460  
Phone: 202-260-7417

### Design for the Environment (DfE)

Joe Breen  
U.S. EPA (7406)  
401 M Street, SW  
Washington, DC 20460  
Phone: 202-260-1678

### Energy Star Buildings/Green Lights

Maria Tikoff  
U.S. EPA (6202J)  
401 M Street, SW  
Washington, DC 20460  
Fax-on-demand: 202-233-9659 (for information by fax)

Green Lights and Energy Star Program Hotline

Phone: 202-775-6650  
Fax: 202-775-6680

### Energy Star Programs

Jeanne Briskin  
Linda Latham  
U.S. EPA (6202J)  
401 M Street, SW  
Washington, DC 20460  
Hotline: 202-775-6650

### Environmental Accounting

Holly Elwood  
U.S. EPA (7409)  
401 M Street, S.W.  
Washington, DC 20460  
Phone: 202-260-4362  
Fax: 202-260-0178

for documents, call the  
Pollution Prevention Information Clearinghouse  
202-260-1023

### Environmental Leadership Program (ELP)

Debby Thomas  
U.S. EPA (2221A)  
401 M Street, S.W.  
Washington, DC 20460  
Phone: 202-564-4041  
Fax: 202-564-0034

### Green Chemistry

Paul Anastas  
U.S. EPA (7406)  
401 M Street, SW  
202-260-2257

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**Indoor Environments Division**

Mary Smith, Director  
U.S. EPA (6607J)  
401 M Street, SW  
Washington, DC 20460  
Phone: 202-233-9370  
Fax: 202-233-9652

Indoor Air Quality Information Hotline  
1-800-438-4318 (in DC 202-484-1307)  
Fax: 202-484-1510

Radon Information Clearinghouse  
1-800-SOS-RADON

**Landfill Methane Outreach Program**

Tom Kerr  
U.S. EPA (6202J)  
401 M Street, SW  
Washington, DC 20460  
Phone: 202-233-9768  
Fax: 202-233-9569  
Hotline: 202-233-9042

**Natural Gas STAR**

Andrea Osborne  
U.S. EPA (6202J)  
401 M Street, SW  
Washington, DC 20460  
Phone: 202-233-9044

**Pesticide Environmental Stewardship Program (PESP)**

PESP Infoline: 1-800-972-7717  
Sherry Glick, Communication/Outreach Team Leader  
U.S. EPA (7501W)  
401 M Street, SW  
Washington, DC 20460  
Phone: 703-308-7022  
Fax: 703-308-8189

**Project XL**

Jon Kessler  
U.S. EPA (3202M)  
401 M Street, SW  
Washington, DC 20460  
Phone: 202-260-3761

**Ruminant Livestock Methane Program**

Mark Orlic  
U.S. EPA (6202J)  
401 M Street, SW  
Washington, DC 20460  
Phone: 202-233-9043

**State and Local Outreach Program**

Katherine Sibold, Director  
U.S. EPA (2122)  
401 M Street, SW  
Washington, DC 20460  
Phone: 202-260-4314  
Fax: 202-260-6405  
Fax -on-demand: 202-260-2860

**Transportation Partners**

Paula Van Lare  
U.S. EPA (2126)  
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Washington, DC 20460  
Phone: 202-260-3729

**U.S. Initiative on Joint Implementation (USIJI)**

Ken Andrasko  
U.S. EPA (2122)  
401 M Street, SW  
Washington, DC 20460  
Phone: 202-260-6803/202-426-1675  
Fax-on-demand: 202-260-8677  
Fax: 202-260-6405/202-426-1540

**Voluntary Aluminum Industrial Partnership (VAIP)**

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U.S. EPA (6202J)  
401 M Street, SW  
Washington, DC 20460  
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Fax: 202-233-9569

**Voluntary Standards Network**

Mary McKiel  
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Washington, DC 20460  
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Fax: 202-260-0178

for documents, call the  
Pollution Prevention Information Clearinghouse  
202-260-1023

**Waste Minimization National Plan**

Donna Perla  
U.S. EPA (5302W)  
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Washington, DC 20460  
Phone: 703-308-8433  
Fax: 703-308-8433



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**WAVE**

John E. Flowers  
WAVE Program Director  
U.S. EPA (4204)  
401 M Street, S.W.  
Washington, DC 20460  
Phone: 202-260-7288  
Fax: 202-260-1827

**WasteWiSe**

WasteWiSe Hotline: 1-800-EPA-WISE  
Lynda Wynn  
WasteWiSe Program Director  
U.S. EPA (5306W)  
401 M Street, SW  
Washington, DC 20460  
Phone: 703-308-7273  
Fax: 703-308-8686

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## D. EPA VOLUNTARY INITIATIVES

### 1. 33/50 PROGRAM

#### HISTORY

The 33/50 program was established in 1991 -- the first major EPA voluntary pollution prevention reduction initiative. EPA challenged corporate America to reduce toxic emissions, to use whatever methods were appropriate, but to consider and adopt source reduction whenever possible.

Corporate America rose to the challenge and responded resoundingly to EPA with 1,300 individual commitments, which identify and quantify each company's chemical emission reduction goals. Taken together, the 33/50 letters became voluntary pledges to reduce pollution across the nation. These were no ordinary letters. They were the sole requirement for participating in the 33/50 Program. No new paperwork - just partnerships between government and industry.

#### GOALS

The 33/50 Program set national priorities for preventing chemical releases to the environment by targeting 1.5 billion pounds of 17 priority pollutants reported to TRI in 1988 for reduction by 33% in 1992 and 50% in 1995. The 33/50 target chemicals were selected on the basis of relative toxicity, volumes of use and potential for reduction through pollution prevention:

Benzene	Cadmium & compounds	Carbon tetrachloride
Chloroform	Chromium and compounds	Cyanide compounds
Dichloromethane	Lead & compounds	Mercury & compounds
Methyl ethyl ketone	Methyl isobutyl ketone	Nickel & compounds
Tetrachloroethylene	Toluene	1,1,1-Trichloroethane
Trichloroethylene	Xylenes	

#### COMPANY PARTICIPATION

Corporate America's commitment to a cleaner environment in a healthy economy is 1,300 companies strong in the 33/50 Program. These companies volunteered to take on the huge national challenge of cutting pollution in half in 5 years. The buy-in and motivation is light years ahead of traditional command-and-control responses to environmental regulation.

More than 20 of these companies have been profiled by EPA in summaries of the benefits of participation in 33/50 and achievements in reducing toxic wastes at individual facilities. Chemical Engineering magazine selected 21 "Environmental Champions" and featured their stories in an 84-page supplement to the December 1995 issue.

#### BENEFITS OF PARTICIPATION

In return for 33/50 commitment letters, EPA acknowledges each company with a certificate of appreciation for voluntary participation. These certificates are prized by industry and often used to launch new product lines or as bargaining chips in vendor selection preference. Positive public recognition effectively reinforces sound environmental stewardship. The non-regulatory and non-confrontational approach of 33/50 changes the nature of the relationship between government and industry to partnering for environmental

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problem-solving. The 33/50 program bridges the gap between current industry waste disposal practices and EPA pollution prevention hierarchy of preferred options. In effect, the 33/50 partnerships found the common ground between economic prosperity and environmental sustainability by converting waste into profits. One company literally reinvented environmental management at its facilities and converted the cost of zinc disposal into a zinc-fertilizer profit. The American people are getting a great return-on-investment (ROI) on their tax dollars because the government is redirecting funds from environmental lawsuits back to cleanups.

### **PROGRESS**

Nearly 700 million pounds of toxic waste is no longer burned, buried, flushed or transported to treatment, disposal or recovery plants each year. According to the 1993 TRI Reports, the 33/50 program showed progress at the 46 percent mark -- just 4 percent shy of the national goal set for 1995. Moreover, the 1993 TRI reports show 33/50 companies reducing toxic emissions at 3 times the rate of other companies reporting to TRI. Clearly, partnerships could prove to be more effective and work faster than the prescription of early command-and-control regulations.

### **FUTURE**

The 33/50 Program stands as EPA's first successful experiment in 1,300 voluntary environmental partnerships because it is simple and flexible. Preliminary review of the 1994 TRI data already indicate that the final 50 percent pollution reduction goal, slated for 1995, will be achieved a year ahead of schedule. EPA plans to celebrate national success in a conference in September, 1996.

New directions for the 33/50 Program are under active discussion right now at the highest levels of government, industry and academia. The 33/50 Program has set the stage for reinventing environmental regulation.

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## 2. AGSTAR

### HISTORY

AgSTAR is a voluntary EPA, U.S. Department of Agriculture (USDA), and DOE sponsored program that promotes cost-effective methods for reducing methane emissions through manure management. The program was originally launched during the summer of 1993, and was later expanded under the U.S. Climate Change Action Plan (CCAP). AgSTAR is also designed to remove barriers that impede the widespread adoption of technologies that capture and utilize the energy value in agricultural methane. The main focus of the program is on the swine and dairy industries.

Methane is produced as manure decomposes anaerobically. Large quantities of methane are produced by liquid and slurry storage systems that are typically used in the more modern, larger swine and dairy farms. Manure management systems produce about 10 percent of total U.S. anthropogenic methane emissions. Methane emissions are of concern because methane is a potent greenhouse gas, about 25 times more effective at trapping infrared radiation than an equal quantity of carbon dioxide (mass basis) over a one hundred year time horizon. By recovering methane from the manure produced by the nation's largest swine and dairy operations, emissions can be substantially reduced while the energy value, which would otherwise be lost, is captured. Methane recovery systems also reduce odors and contribute to better water quality from more efficient manure management. EPA estimates that there are at least 3000 U.S. farms that could profitably reduce methane emissions by participating in the AgSTAR program.

### GOAL

AgSTAR's goal is to reduce U.S. methane emissions by 2.25 million metric tons of carbon equivalent by the year 2000. To achieve this goal, it will be necessary for 3000 farms to install manure methane recovery systems (approximately 20 percent of the swine industry and 15 percent of the dairy industry).

### PARTICIPATION

In order to realize the full energy, cost savings and environmental potential that exists, AgSTAR has organized the program into two major components: the Industry Ally Program and the Partner Program. Currently, AgSTAR has 28 Industry Allies that have agreed to promote cost-effective methods for reducing methane emissions and assist in assessing the supply and demand for methane recovery products. Some of these products include items such as electrical interfacing equipment, generators, engines, lagoon covers, etc. Services such as digester design, electrical interfacing and manure management, are also provided by AgSTAR Allies. AgSTAR also has 13 Partners representing 62 livestock facilities. These Partners have agreed to survey their facilities and install methane recovery systems where it is profitable. One non-profit organization has joined the AgSTAR Program as an Endorser and is assisting in promoting the program and its benefits.

### BENEFITS OF PARTICIPATION

Livestock producers derive three main types of benefits from participation in AgSTAR - environmental, business and public relations. The environment is cleaner because greenhouse gas emissions are reduced, odors are reduced and an additional step is taken toward protecting water quality. The business of farming becomes more efficient by allowing the farmer to capture more value from livestock feed by converting the organic nutrients in the manure into methane, which results in energy savings when used. Finally, there are public relations benefits. All AgSTAR participants, including Utility Allies, Industry Allies and the livestock producer Partner, receive public recognition from the program for their environmental stewardship.

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### 3. CLIMATE WISE RECOGNITION PROGRAM

#### HISTORY

In 1993, EPA and the Department of Energy (DOE) formed a unique partnership that led the following year to the launching of Climate Wise -- a voluntary program that encourages industry to adopt flexible, comprehensive approaches to reducing greenhouse gas emissions. Climate Wise is a key part of the nation's Climate Change Action Plan and reinforces and supports provisions of the 1993 Energy Policy Act.

On April 21, 1994, Climate Wise was launched at the White House Conference on Climate Action. With 13 charter companies, Climate Wise companies already represent almost 4 percent of U.S. industrial energy use. Through Climate Wise, participants develop a comprehensive portfolio of emissions reduction actions that protect the environment, save money, and improve productivity. The program provides technical assistance and puts companies in touch with financial services to "jump start" energy efficiency and pollution prevention actions. Shifting the focus from specific technologies to performance, Climate Wise allows companies to pursue common sense approaches to achieving environmental and economic results.

#### GOALS

Climate Wise helps companies turn energy efficiency and pollution prevention into a corporate asset. The program has three goals:

- Encourage the immediate reduction of energy use and greenhouse gas emissions in the industrial sector through cost-effective, flexible actions
- Change the way companies view and manage for environmental performance by demonstrating the economic and productivity gains associated with "lean and clean" management
- Foster innovation by allowing participants to identify the actions that make the most sense for their organization.

#### PARTICIPATION

Partners sign on by completing a *Climate Wise Partnership Agreement*, a simple one page form that asks companies to

- Designate a Climate Wise contact and program manager
- Establish a process for identifying and implementing cost-effective energy efficiency and pollution prevention actions
- Submit a *Climate Wise Action Plan* within 6 months of joining

The Climate Wise Action Plan is a corporate strategy for achieving environmental and economic results. Partners have an opportunity each year to update or revise their plan to replace or revise individual actions while maintaining or exceeding the original emissions reductions targets.

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### **BENEFITS OF PARTICIPATION**

Climate Wise companies save money, receive technical assistance and support for identifying financing options, meet and work with other leading industries and select service providers, and receive public recognition that demonstrates environmental leadership and performance.

**Save Money** -- By the year 2000, Climate Wise companies expect to save more than \$80 million annually through their efficiency measures. At a facility level, savings of \$400,000 to \$500,000 annually are being realized now. Much of the savings is being achieved through process and maintenance projects that require little or no capital investment. Other companies are investing in the future with dramatic plans for using alternative and renewable fuels, cogeneration, and employee and vehicle trip reduction programs.

**Get Technical Assistance** -- Climate Wise connects partners with some of the best minds and resources in the country. They include national laboratories, university centers, utilities, trade associations, and state and local government pollution prevention, energy, and economic development offices. Assistance may include support for conducting energy efficiency audits, designing and implementing projects, and tracking and calculating energy use and emissions reductions. The Climate Wise Opportunities Assessment Guide and Climate Wise Case Studies steer partners toward productive and profitable efficiency improvements. Partners are also encouraged to join other EPA and DOE voluntary programs that can assist them.

**Exchange Information with Industry Leaders** -- Partners participate in and cosponsor business to business exchange workshops to learn how other leading companies have improved profitability, productivity, and environmental performance. These events are designed to launch ongoing regional meetings that bring Climate Wise partners together with local utilities, peer companies, or supplier companies. These sessions provide an ongoing support system for project implementation.

**Learn About Financial Assistance** -- Climate Wise puts partners in touch with financial assistance providers that can help make a corporate strategy a reality. Sources include loan guarantees from the Small Business Administration (SBA), low-interest buy-downs from state providers, utility programs, and private sector financiers. SBA is already targeting loan guarantee funding for 50 Climate Wise projects. The Nebraska Dollar and Energy Saving Loan Program is providing low interest loans of up to \$250,000 to eligible Climate Wise partners.

**Get Public Recognition** -- Climate Wise recognizes companies for commitments and results through national and local Partnership Agreement signing ceremonies, award programs, public service advertising, support for participant sponsored media events and showcase demonstrations.

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## 4. COALBED METHANE OUTREACH PROGRAM

### HISTORY

The Coalbed Methane Outreach Program was launched in spring 1994 to identify and remove obstacles to increased investment in coalbed methane recovery projects. The program raises awareness of opportunities for profitable investment. As a result, coal mines are discovering that methane recovery improves the safety and productivity of mining operations and enables them to profit from methane that was once simply a high-cost mining safety hazard. Local communities and other industries are recognizing that coalbed methane development creates jobs and revenues for the local economy.

Emissions associated with coal mining operations account for approximately 18 percent of anthropogenic methane emissions in the U.S. Methane is a potent greenhouse gas; each pound of methane emitted from coal mining is about 25 times more effective at trapping radiation in the atmosphere than a pound of carbon dioxide.

### GOAL

The Coalbed Methane Program's goal is to identify barriers and remove obstacles to profitable methane recovery at coal mines through dissemination of unbiased technical and economic information.

### PARTICIPATION

Through the Coalbed Methane Outreach Program, EPA works with industry, states, and other agencies to encourage profitable methane recovery. The Program does not include formal partners that sign agreements with EPA. Instead, the Program achieves its objectives by providing critical targeted information and connecting project partners. There are only a handful of existing projects at U.S. underground coal mines. Under this program, an additional 10 coal mines in the U.S. will recover and use coalbed methane by 2000, creating over 2,000 new jobs.

### BENEFITS OF PARTICIPATION

The Program does not include formal partners that sign agreements with the EPA. However, EPA provides states, industry, other agencies, and the public with information on profitable coalbed methane recovery opportunities, project feasibility studies, guides for state, federal and private finance sources, and evaluations of alternative local uses for recovered coal mine methane.

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## 5. COMMON SENSE INITIATIVE

### HISTORY

The Common Sense Initiative (CSI) is a fundamentally different vision of environmental policy. Through this initiative, EPA has convened representatives from federal, state, and local governments, community-based and national environmental groups, environmental justice groups, labor, and industry to examine the full range of environmental requirements impacting six pilot industries -- automobile manufacturing, computers and electronics, iron and steel, metal finishing, petroleum refining, and printing. These six teams are looking for opportunities to change complicated and inconsistent environmental regulations into comprehensive strategies for environmental and public health protection that all can agree to, with an emphasis on pollution prevention, instead of end-of-pipe solutions. The initiative reflects the EPA's commitment to setting strong environmental standards, while encouraging common sense, innovation, and flexibility in how they are met.

### GOAL

The goal: a cleaner environment at less cost to taxpayers and industry.

### PARTICIPATION

There are six teams which meet frequently and have several exciting projects underway, including:

- Creating a streamlined, consolidated reporting alternative for the **petroleum refining sector** that eliminates duplication and provides data in a form that is easy for communities to understand;
- Developing new ways to clean up **iron and steel sector** "brownfields" -- contaminated, abandoned industrial properties -- and return them to productive economic use in the community;
- Making it easier for the **computers and electronics sector** to achieve pollution prevention, recycling and water conservation under hazardous waste regulations;
- Reducing the costs and burdens of compliance with specific clean air regulations in the **auto manufacturing sector**, without sacrificing public health protection;
- Creating a new consolidated permit system for the **printing sector** that will provide better environmental protection for our air, land and water, improve worker protection, and provide these small businesses with operational flexibility; and
- Testing the environmental and economic effects of providing greater flexibility for recognized environmentally responsible **metal finishing sector** firms to achieve "beyond compliance" environmental performance.



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## 6. DESIGN FOR THE ENVIRONMENT (DfE)

### HISTORY

The Design for the Environment (DfE) program in EPA's Office of Pollution Prevention and Toxics was created in 1991 to promote the incorporation of environmental considerations into the design and redesign of products, processes, and technical and management systems. By consciously designing for the environment, the program aims to encourage pollution prevention and efficient risk reduction in a wide variety of activities. Under the DfE program, EPA works through voluntary partnerships with industry, professional organizations, state and local governments, other federal agencies, and the public, including environmental and community groups.

### GOALS

The DfE Program aims to turn pollution prevention into both a corporate and environmental asset, by helping businesses incorporate environmental considerations into the design and redesign of products, processes, and technical and management systems. The program has three goals:

Encourage voluntary reduction of the use of specific hazardous chemicals by businesses, governments, and other organizations through actual design or redesign of products, processes, and technical and management systems.

Change the way businesses, governments and other organizations view and manage for environmental protection by demonstrating the benefits of incorporating environmental considerations into the up-front design and redesign of products, processes, and technical and management systems.

Develop effective voluntary partnerships with businesses, labor organizations, government agencies, and environmental/community groups to implement DfE projects and other pollution prevention activities.

### PARTICIPATION

DfE projects include three distinct project types:

- Institutional projects are aimed at changing specific aspects of general business practices in order to remove barriers to and provide positive incentives for businesses and other organizations to undertake environmental design and pollution prevention efforts.
- Cooperative industry projects are joint efforts with trade associations and businesses in specific industries to assist businesses in selecting more environmentally-sound products, processes and technologies, especially through provision of easily-accessible information on the comparative risks, performance, and costs of alternatives to currently used chemicals.
- Cooperative government projects are joint efforts with government organizations to promote the use of environmentally-preferred products by government organizations.

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### CURRENT DfE PROJECTS

Current DfE projects are listed below. EPA's DfE program is also exploring potential opportunities for new projects and partnerships with other industries, government and academia.

#### A. Institutional Projects

- *Environmental Accounting:* Most accounting systems treat part or all of a business's environmental costs as overhead costs, separating them from the products or processes responsible for generating them. This masks the true environmental costs of a particular product or process, and fails to provide sufficient information for managers to make an informed and optimal decision. Without the pertinent cost information, managers do not see the advantages of investments that prevent pollution and minimize environmental costs. EPA's Environmental Accounting Project seeks to encourage and motivate industry to understand the full spectrum of their environmental costs and incorporate these costs into decision making. (See longer description of this project under Section D. 11.)
- *Curriculum Development:* EPA has established a National Pollution Prevention Center at the University of Michigan. The Center is developing curricula in multiple disciplines (e.g., business, accounting, marketing) which incorporates pollution prevention concepts, life-cycle analysis, and DfE principles, rather than traditional end-of-pipe pollution control techniques in courses in engineering, business, and natural resources.
- *Green Chemistry Program/Challenge:* Many of the traditional synthetic pathways used in chemical design result in the creation of hazardous and toxic products and by products. The Green Chemistry Program is working collaboratively with chemists in academia, industry and government to encourage the design and redesign of chemical products and processes so as to minimize adverse impacts on human health and the environment. This program also included a competitive recognition component which recognizes and promotes fundamental breakthroughs in chemistry that accomplish pollution prevention through source reduction, and that are useful to industry. (See longer description of this program under Section D.13.)
- *Insurance:* EPA has completed a cooperative effort with the American Institute of Chartered Property and Casualty Underwriters (AICPCU), an independent non-profit organization offering educational programs and professional certification to people in the property and liability insurance business. The cooperative effort incorporated pollution prevention into the curriculum for AICPCU's certification program for Associates in Risk Management. In addition, through a grant with the Santa Clara County Pollution Prevention Program, EPA is documenting ways through which the insurance industry will work with their clients to incorporate pollution prevention activities into their daily operations in exchange for reduced insurance premiums.
- *Pollution Prevention Financing:* An important constraint on the adoption of new technologies is the availability of financing. Due to a limited familiarity with environmental issues and a shifting legal landscape, the financial community tends to associate potential investments in the environmental realm more with *liability* than with *opportunity*. At the same time, many businesses, especially small and mid-sized firms, lack the necessary resources to package their loan requests effectively. EPA intends to address these issues through a variety of outreach efforts to businesses and the financial community. Efforts are underway to coordinate EPA's environmental regulatory and

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technical assistance programs with the business development assistance offered by the Small Business Administration's network of Small Business Development Centers. In addition, EPA is supporting work at the Great Lakes Environmental Finance Center to determine: (a) which structural impediments to financing for pollution prevention projects might underlie standard lending practices; and (b) the feasibility of industry-specific targeted loan programs for pollution prevention investments.

#### B. Cooperative Industry Projects

- *Dry Cleaning Project:* Through the DfE program, EPA is working in partnership with the dry cleaning industry and environmental organizations to reduce exposure to perchloroethylene or "perc". Perc, a chemical solvent used by most dry cleaners, poses potential health and environmental concerns. EPA is examining alternative technologies, solvents, and pollution control methods as part of a Cleaner Technology Substitutes Assessment. At the conclusion of the assessment, EPA plans to publish a technical summary of alternative solvents and processes and an informational document on cost-effective, environmentally safer choices discovered through the project.
- *Printing Project:* The DfE Printing Project is a cooperative EPA-industry project aimed at developing specific pollution prevention information for small and medium sized printers. Each of the six different methods of printing in use today has different chemical and technological alternatives. Industry representatives have prioritized areas of environmental concern for three of the printing methods: screen printing, lithography, and flexography. Project committees made up of both EPA and industry representatives are developing Cleaner Technology Substitute Assessments (CTSAs) as well as outreach strategies and information products to communicate the results of the project to printers.
- *Printed Wiring Board Project:* The printed wiring board (PWB) is the building block of the electronics industry; it is the underlying link between semiconductors, computer chips and other electronic circuitry. The PWB's manufacturing process requires substantial amounts of water, energy and some toxic chemicals that may pose environmental and health risks. To address these issues, the cooperative DfE PWB project was formed to develop pollution prevention information to facilitate the evaluation and implementation of alternative materials, processes, and technologies. Specifically, the project is developing a Cleaner Technology Substitutes Assessment for the "making holes conductive" step of PWB manufacturing as well as outreach strategies and information products to communicate project results to the PWB industry.
- *Lean Aircraft Initiative:* EPA has joined with the U.S. Air force and twenty of the major U.S. aerospace companies to identify, develop, and test options for streamlining the entire process of aircraft design, manufacture, use, maintenance, and disposal, with the goal of improving the competitive posture of the U.S. aerospace industry while simultaneously incorporating pollution prevention strategies and technology into all phases of the aircraft life cycle. Waste minimization and toxics use reduction are key components of the project. Because the goal of the project is to fundamentally change the entire process of designing and building aircraft, it provides a unique opportunity to incorporate Design for the Environment and sustainable development principles into competitive practices across an entire industry. Individual companies have already implemented pilot

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projects in solvent use reduction. The Massachusetts Institute of Technology is conducting the bulk of the research and will prepare a full report in 1996.

- *Small Aircraft Paint Stripping Project:* Under the Clean Air Act, EPA has a new requirement that certain companies must reduce to zero their emissions of methylene chloride from aerospace paint stripping by September 1998. Mechanical alternatives to methylene chloride are available for large commercial and military aircraft, but those technologies are prohibitively expensive for small businesses and can seriously damage the thin-skinned, single- and twin-engine aircraft common to the general aviation (GA) community. GA aircraft currently outnumber commercial aircraft by about 23 to 1. To help the GA industry, EPA and the U.S. Coast Guard have entered into a partnership with key trade associations, including the General Aviation Manufacturers Association, the National Air Transport Association, and the Professional Aviation Maintenance Association, to identify economically viable and environmentally preferable chemical and technological alternatives to methylene chloride that could be used safely on small aircraft. The project is identifying alternatives from which individual maintenance facilities can choose the approach best suited to their needs with a full understanding of environmental, cost, effectiveness, and safety factors. The project is also working with the Federal Aviation Administration and with individual aircraft manufacturers to ensure that the alternatives meet regulatory airworthiness criteria and are included in required maintenance manuals.
- *Metal Finishing Project:* Metal surface finishing involves a variety of processes to coat a metallic base material with one or more layers of another metal, paint, or plastic to enhance, alter, or finish its surface. Typical metal finishing processes also produce air emissions, wastewater effluent, and solid waste (sometimes hazardous). EPA has joined with the metal finishing industry and other federal agencies in a voluntary effort to foster the integration of environmental protection concerns into the basic business-oriented activities of metal finishing shops, including providing information about less polluting materials and process alternatives. This project has three objectives: 1) develop methods and tools to assist metal finishers identify and cost-justify pollution prevention practices and process-change; 2) identify industry technology needs, sources and demonstration projects; and 3) conduct demonstration projects that address industry needs.

C. Cooperative Government Projects

- *GSA Products Project:* This joint pilot project between EPA and the federal government's General Services Administration (GSA) was initiated in 1993 to help implement the President's Executive Order 12873: "Federal Acquisition, Recycling and Waste Prevention." The project will provide federal purchasers with information on certain environmental attributes for certain products, starting with cleaning products. Federal purchasers can thus select cleaning products that are environmentally preferable for their specific circumstances. (Please note that this is not a list of environmentally preferable products.) EPA has assisted GSA's Federal Supply Service in developing a solicitation for voluntary supplemental information to add to GSA's multiple award Schedule Contract for Biodegradable Cleaners/Degreasers. This information has been provided by many of the Schedule's vendors and will be presented in a tabular format in the GSA Commercial Products brochure to be published in February, 1996. EPA and GSA will monitor the success of this project, now in the planning stage, will focus on wall paint products.

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## 7. ENERGY STAR BUILDINGS

### HISTORY

The Energy Star Buildings program is a voluntary energy-efficiency partnership between U.S. commercial and industrial buildings owners and EPA. The Energy Star Buildings program implementation focuses on the use of proven technologies to prevent pollution through profitable investment opportunities. The program is a multi-stage strategy that considers system interactions, resulting in additional energy savings, while lowering capital expenditures and preventing pollution. Currently, there are over 75 Energy Star Buildings Partners, representing over 400 million square feet of facility space.

### GOAL

The goal of the Energy Star Buildings program is to maximize energy efficiency and profits while reducing atmospheric pollution. The U.S. spends \$70 billion a year to operate commercial and industrial buildings. New energy-efficient technologies can cut this energy use by more than 40 percent. Expected commitments by Energy Star Buildings partners in the year 2000 could result in \$40 billion saved and 22 million metric tons (MMT)/year of carbon dioxide emissions avoided over 20 years.

### PARTICIPATION

The Energy Star Buildings Program began in 1994 with 24 Showcase Buildings. The Showcase Buildings Partners completed comprehensive 5-stage upgrades within one year. These Showcase Buildings have demonstrated the effectiveness of the Energy Star Buildings implementation process.

The Energy Star Buildings' implementation process considers systems interactions and allows for additional energy savings while lowering capital expenditures. The 5 stages of an Energy Star Building upgrade are:

- 1) Green Lights
- 2) Building Tune-up
- 3) HVAC Load Reductions
- 4) Improved Fans and Air-Handling Systems
- 5) Improving Heating and Cooling Plant

There are currently over 75 Energy Star Buildings partners. Partners are required to survey and complete profitable upgrades in at least 50 percent of their eligible space within 7 years of signing a Memorandum of Understanding with EPA.

### BENEFITS OF MEMBERSHIP

The Energy Star Buildings program gives commercial and industrial building owners an opportunity to act as responsible, proactive corporate citizens. The program allows companies to work toward the reduction of atmospheric pollution and greenhouse gas emissions while lowering their operating costs, increasing their energy efficiency, and improving the air quality of their buildings.

EPA publicly recognizes companies for their participation in the Energy Star Buildings program through articles, media events, and public service announcements. EPA encourages participants to take advantage of their own opportunities for public recognition through appropriate use of the Energy Star Buildings logo and other materials that can be incorporated into internal communication, marketing, and advertising.

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EPA provides technical assistance to help plan and implement building upgrades. Assistance includes a 24-hour hotline, an Energy Star Buildings Upgrade Manual, a fan system upgrade manual, software to calculate savings from upgraded fan systems, a database of financing programs for building efficiency upgrades, briefs of specific technologies, case studies of building upgrades and many other informational guides.

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## 8. ENERGY STAR RESIDENTIAL PROGRAMS

### HISTORY

The Residential Energy Star Programs are market-based initiatives to prevent pollution by reducing energy use in the residential sector. Working through a combination of several voluntary programs, including Energy Star Homes, Energy Star Products, and Energy Star Financing, EPA implements a comprehensive strategy to profitably prevent pollution. The programs were launched in April 1995 and are already helping many Americans save money while preventing pollution.

### GOAL

The U.S. EPA promotes residential energy efficiency because household energy use contributes to air pollution, including 20 percent of all U.S. emissions of carbon dioxide. It also accounts for 26 percent of sulfur dioxide emissions and 15 percent of nitrogen oxides emissions. By using more energy efficient appliances and heating and cooling equipment, and by constructing more energy efficient homes, we can reduce this pollution -- and save money at the same time! Expected commitments by Energy Star residential partners in 2000 will save \$1.8 billion in energy bill savings and prevent 18 million metric tons of carbon dioxide emissions.

### PARTICIPATION

The Energy Star Residential Programs will provide opportunities for numerous groups. In the Energy Star Homes Program, EPA works with builders to build new homes that are at least 30 percent more efficient than the 1992 Model Energy Code (MEC). Qualifying builders identify their efficient homes to home buyers by using the Energy Star<sup>SM</sup> logo and offer home buyers access to a variety of financing options linked to Energy Star Homes.

EPA signs partnership agreements with industry-leading manufacturers of products that meet specific target performance levels. EPA is working with a wide variety of utilities, product distribution, installer, retail, and government procurement organizations to form partnerships to encourage manufacturers to market and sell Energy Star products. Residential energy star products include furnaces, air source heat pumps, ground source heat pumps, air conditioners, and thermostats, with many more available soon. More than 10,000 models of products with the Energy Star label are available today.

The Energy Star Homes and Products programs are profitable for builders, manufacturers and consumers. Through energy efficiency, consumers save money by reducing their energy bills. Energy Star financing provides long-term, no down-payment loans to consumers where net monthly energy savings exceed the monthly loan payments, thereby making Energy Star upgrades profitable for consumers from day one.

### BENEFITS OF MEMBERSHIP

- Homeowners will have more comfortable, safer, and higher quality homes with substantially reduced operating costs;
- New home builders will sell homes more quickly. They will be able to distinguish their new products at no extra out-of-pocket costs to home buyers;

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- Home improvement industry will have a wide array of new products and services they can offer profitably;
  - Utilities can utilize these low-cost programs to provide valued customer services highly suited to increasingly competitive markets;
  - Product manufacturers, distributors, and vendors will have expanded markets and increased sales of their high- efficiency products; and
  - The public will benefit from significant prevention of air pollution, easier access to higher quality homes, equipment and financing through transformation of the market without regulation.



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## 9. ENERGY STAR OFFICE EQUIPMENT

### GOAL

Research has shown that much of the electricity consumed by office equipment is wasted. EPA's Energy Star Office Equipment program is a voluntary program for computer and office equipment manufacturers. They are asked to develop desktop computers, monitors, printers, fax machines and copiers that can power-down while not in use. Energy Star Office Equipment can reduce energy consumption by approximately 50 percent.

A Presidential Executive Order, in effect since October, 1993, directs U.S. agencies to purchase only desktop computers, monitors, and printers that meet EPA Energy Star guidelines for energy efficiency. This Executive Order should save taxpayers \$40 million annually. EPA urges private and other public organizations to commit to a similar Energy Star purchasing policy.

### RESPONSIBILITIES OF MEMBERSHIP

Computer manufacturers agree to produce personal computers and monitors capable of achieving a low-power state during times of inactivity. EPA defines a "low power state" as less than or equal to 30 Watts for either the computer or the monitor.

Similarly, Printer and Fax Partners agree to manufacture equipment capable of entering a low-power state. "Low power state" varies from 15-45 Watts depending on the output specifications (pages per minute) of the device.

Copier manufacturers agree to produce copiers that automatically turn off when not in use. Larger copiers are also set with double-sided copying as the default mode. This saves paper and helps reduce waste sent to landfills.

### BENEFITS OF MEMBERSHIP

Energy Star Partners selling compliant products may use the Energy Star<sup>SM</sup> logo to label their equipment. Partners may also promote their efficient products by using the logo in advertisements, brochures and catalogues.

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## 10. ENERGY STAR TRANSFORMER PROGRAM

### HISTORY

The Energy Star Transformer Program was launched on April 10, 1995. The Program has three distinct membership categories: Utility Partners, Manufacturing Partners, and Allies. By the end of 1995, 10 percent of the electric utility industry (as measured by utility purchases) had joined the program.

### GOAL

The Energy Star Transformer Program's goal is to encourage the use of high-efficiency distribution transformers by utilities where they are cost-effective. Utility Partners agree to analyze their transformer purchases using the industry's highest standards and buy transformers which qualify for the Energy Star designation where cost-effective. Currently, nine utility partners, representing 13 utilities and about 10 percent of the U.S. utility transformer market, have signed up for the program. Manufacturing partners agree to produce and market Energy Star transformers. Currently, seven transformer manufactures, representing over 90 percent of utility transformer sales, have signed on as Program Partners. Finally, Energy Star Allies agree to produce transformer components and materials which play a critical role in determining transformer efficiency. Currently two companies are Energy Star Transformer allies, and there is one program endorser.

All of these members work with EPA to overcome the barriers to the purchase and use of cost-effective, high-efficiency utility distribution transformers. Since its inception, the Energy Star Transformer Program has worked with utilities and transformer manufacturers to provide information on the benefits of high-efficiency transformer use as well as technical tools which will help utilities optimize their transformer purchases. In addition, EPA works with Partners to determine which elements of the regulatory process may act as roadblocks to the use of high efficiency transformers.

Over 61 billion kilowatt hours of energy is lost each year in electric distribution transformers, or more than two percent of annual U.S. power generation. On average, each of the one million transformers purchased each year by U.S. electric utilities results in over 33,000 kilowatt hours of energy losses over its lifetime. The resulting emissions over the service lives of these transformers are huge: over 20 tons of carbon dioxide, 150 kilograms of sulfur dioxide and 60 kilograms of nitrogen dioxide. In most of these cases, energy losses and the attendant emissions can be cost-effectively reduced by 10-40 percent using available transformer technologies.

### BENEFITS OF PARTICIPATION

EPA recognizes Energy Star Transformer Partners through newsletters, articles, media events, and public service advertisements, thereby increasing public awareness of their efforts to reduce greenhouse gas emissions while lowering system costs. EPA plans to develop numerous software and other technical tools which will assist utility efforts to optimize transformer purchases and minimize air emissions which result from excess energy losses.

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## 11. ENVIRONMENTAL ACCOUNTING PROJECT

### HISTORY

The Environmental Accounting Project began in 1992, in response to concerns from outside stakeholders. These stakeholders believed that pollution prevention would not be adopted as the first choice of environmental management by the industry until the environmental costs of non-prevention approaches and the economic benefits of pollution prevention could be seen by managers making business decisions. Upon hearing these concerns, the EPA's Pollution prevention Division convened a focus group of experts to help determine the role EPA could play in this issue. The focus group offered three main recommendations, which were all adopted. These recommendations included: 1) the establishment of the Environmental Accounting Project, 1) the adoption of a project goal statement, and 3) the development of a larger stakeholder meeting, where specific action agendas would be created for every stakeholder group interested in improving the way that environmental costs are accounted for. The Project held the Stakeholder's Action Agenda meeting in December, 1993 in collaboration with the Institute for Management Accountants, the American Institute for Certified Public Accountants, the U.S. Chamber of Commerce, the Business Roundtable, and the American Association of Cost Engineers. The Environmental Accounting Project uses the Federal Government Action Agenda developed by our stakeholders at that meeting as our plan for action, and have engaged in numerous collaborative activities to date to meet the Project's goal.

### GOALS

To encourage and motivate business to understand the full spectrum of their environmental costs, and integrate these costs into decision making.

### COMPANY PARTICIPATION

The Environmental Accounting Project has a Network Directory of over 650 members who are actively participating or interested in the issue. Over 150 of these members are from industry. We also work closely with companies as part of our case study development process. Recent case studies highlight efforts at AT&T and Ontario Hydro to implement environmental accounting.

### BENEFITS OF PARTICIPATION

Implementing environmental accounting will make environmental costs more visible to company managers, thus making those costs more manageable and easier to reduce. Environmental accounting gives companies the opportunity to significantly reduce or eliminate environmental costs, improve environmental performance, and gain competitive advantage.

Members of the EPA's Environmental Accounting Network are listed in the annually updated Network Directory, which acts as a networking tool for those interested in getting specific information on environmental accounting activities taking place in the U.S. and worldwide in industry, academia, trade associations, non-profits, etc. Members also regularly receive new products developed by the Project and information on our activities.

### PROGRESS

Since the Project's inception 3 years ago, we have sextupled our network membership. Much work has been accomplished to meet our goal. Successes include:

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- ▶ The development of *An Introduction to Environmental Accounting as a Business Management Tool: Key Concepts and Terms*, a primer that covers the basic concepts of the issue, discusses application options, and outlines the way environmental accounting terms are being defined and used by various stakeholders,
  - ▶ Completion of *Environmental Cost Accounting for Capital Budgeting: a Benchmark Survey of Management Accountants*. This is a status report on the extent to which the nation's manufacturing firms consider environmental costs when evaluating potential investments.
  - ▶ Publication of case studies highlighting efforts to implement environmental accounting in industry.
  - ▶ Active participation in the development of the first Management Accounting Guidelines on environmental accounting, to be utilized in Canada and throughout the U.S.
  - ▶ Training of state technical assistance providers and permittees on the environmental accounting concept in several regions.
  - ▶ Workshops for industry and government creating dialogue on environmental accounting.
  - ▶ Development of P2\FINANCE, a software tool designed to help companies incorporate environmental costs into their capital budgeting decisions.

#### **FUTURE**

Plans are in place for the publication of a "Best Practices" report of chemical companies' efforts to account for environmental costs, and an analysis of how environmental accounting applies to the metal finishing industry. Discussion groups will be held with industry on issues of concern for them in implementing environmental accounting. In order to help industry effectively consider potential environmental liabilities in their business planning processes, we are currently documenting available techniques for estimating the value of such liabilities. We plan to widely distribute the tools we have developed and collaborate with trade associations to develop a conference on environmental accounting. We will also continue our exploration of methods of simplifying industry's implementation of environmental accounting.

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## 12. ENVIRONMENTAL LEADERSHIP PROGRAM

### HISTORY

The Environmental Leadership Program (ELP) is designed to recognize and provide incentives to facilities willing to develop and demonstrate innovative approaches to establishing accountability for compliance with existing laws. The program began in June 1994 with a **Federal Register** notice requesting proposals for pilot projects that would demonstrate state-of-the art compliance management programs, environmental management systems, independent audits and self-certification, public accountability and involvement, pollution prevention approaches, and mentoring.

It is one of several new environmental initiatives announced as part of the Clinton Administration's reinvention of regulation to achieve environmental results at the least cost.

### GOALS

This program is currently in a one-year pilot phase. There are four major goals for this phase:

- Determine what should be the basic components of compliance programs and environmental management systems
- Identify the verification procedures to ensure that ELP is working
- To establish measures of accountability so the program will be credible to the public
- To promote community involvement in understanding and supporting innovative approaches to compliance.

The lessons learned from the pilots will be used to help the Agency design a full-scale leadership program which will be open to all facilities willing and able to meet the criteria for being an "environmental leader".

### COMPANY PARTICIPATION

Ten private companies and two federal facilities are testing the design of specific elements of the program during the pilot phase. By January 1997, criteria for the full-scale program should be developed and additional companies can apply at that time.

### BENEFITS OF PARTICIPATION

Pilot participants will receive public recognition for their efforts and have the opportunity to help shape the design of the full-scale program. In addition, neither EPA nor participating State agencies will conduct any routine regulatory inspections at ELP facilities during the course of the pilots. There will also be a limited period in which to correct any violations discovered during these experimental projects, as long as the violations are not criminal in nature and do not present an imminent and substantial endangerment to the public health or environment.

Benefits for participation in the full-scale ELP are still being developed.

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### **PROGRESS**

The twelve pilot facilities were announced in April 1995 and Memorandum of Agreements with all facilities were finalized by August 1995. Products and preliminary evaluations or recommendations will be shared via regular progress reports due at three-month intervals for the course of the pilots. These reports are available electronically via the World Wide Web on the Internet (<http://wastenot.inel.gov/envirosense/>) and in hard copy through the Pollution Prevention Information Clearinghouse (202-260-1023).

### **FUTURE**

After the pilot phase ends in August 1996, draft criteria for the full-scale program will be identified in the **Federal Register** with a goal of January 1997 for implementing the program.

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### 13. GREEN CHEMISTRY PROGRAM/GREEN CHEMISTRY CHALLENGE

#### HISTORY

Shortly after the passage of the Pollution Prevention Act of 1990, the Office of Pollution Prevention and Toxics (OPPT) began to explore the idea of developing new or improving existing chemical products and processes to make them less hazardous to human health and the environment. By 1992, OPPT launched a model research grants program called "Alternative Synthetic Pathways for Pollution Prevention". Since that time the Green Chemistry Program has built collaborations with other federal agencies, industry, and academia to promote the use of chemistry for pollution prevention through completely voluntary partnerships.

#### GOALS

The goal of the Green Chemistry Program is to promote the development of products and processes that reduce or eliminate the use or generation of toxic substances associated with the design, manufacture, and use of chemicals. The Green Chemistry Program was established to recognize and promote fundamental breakthroughs in chemistry that accomplish pollution prevention in a cost effective manner. The program seeks to support research in the area of environmentally benign chemistry, promote partnerships with industry in developing green chemistry technologies, and work with other federal agencies in building green chemistry principles into their operations.

#### CURRENT GREEN CHEMISTRY PROJECTS

##### **Green Chemistry Challenge**

The Green Chemistry program was announced by President Clinton on March 16, 1995 as part of the Reinventing Environmental Regulations Initiative. This program was designed to promote pollution prevention and industrial ecology through a new EPA Design for the Environment partnership with the chemical industry. Through high level recognition and support, the Green Chemistry Challenge will promote fundamental breakthroughs in and innovative uses of green chemistry for pollution prevention. OPPT is working cooperatively with industry and the scientific community to establish this program and will provide the technical assistance needed to both support the program and track the reductions achieved in the manufacture, use, and release of harmful chemicals as a result of the program.

##### **SMART Review Program**

Concurrent to its regulatory review of new chemical substances for health and/or environmental risk, OPPT has begun assessing the pollution potential associated not just with new chemicals, but also with their manufacture. The objective of the assessment is to first identify the source and type of pollution associated with the new chemical, its manufacture, and its use. The assessment then focuses on how the new chemical or its manufacture can be improved upon through the implementation of one or more green chemical methods including use of an alternative synthetic pathway, use of alternative reaction conditions, or optimization of process efficiency. All green chemical methods identified by OPPT as potential solutions to reducing the pollution associated with a new chemical or its manufacture are suggested to the submitting company for its voluntary consideration.

##### **Industry/University/Government Partnerships**

Fundamental research in green chemistry is essential in providing industry with the chemically-viable tools and methods necessary in their development of products and processes that are more environmentally benign. Industry input in fundamental green chemical research is important in ensuring that the tools and methods

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developed are also economically-viable. To accomplish this goal, OPPT supports several industry/university/government consortia including the Emission Reduction Research Center at the New Jersey Institute of Technology, the Toxics Use Reduction Institute at the University of Massachusetts, and the Center for Process Analytical Control at the University of Washington.

#### **Interagency Partnerships**

OPPT has established several partnerships with other agencies that are also promoting pollution prevention through green chemistry. In 1992, EPA and the National Science Foundation signed a Memorandum of Understanding to work cooperatively in supporting basic green chemical research. In addition, OPPT has established a partnership with the Los Alamos National Laboratory also in support of fundamental green chemical research.

#### **Scientific Outreach**

In order for pollution prevention through green chemistry to become a standard in industry, both the concept and the science must be effectively communicated to all sectors of industry and the scientific community in general. OPPT outreach projects include participating in prominent scientific meetings such as American Chemical Society National Meetings, Gordon Research Conferences, and the North American Chemical Congress; publishing in scientific journals and books; and developing and disseminating computational tools and databases.

#### **Green Chemistry Curriculum Development**

One factor that can greatly speed the incorporation of pollution prevention into industrial manufacturing processes is addressing pollution prevention issues in the classical chemistry curriculum. To accomplish this goal, OPPT supports a variety of educational efforts that include the development of materials and courses to assist in the training of professional chemists in industry and education of students in academia. Consequently, the chemical industry is discovering that when their professional chemists are knowledgeable about pollution prevention concepts, they are able to identify, develop, and implement effective pollution prevention technologies. It therefore is imperative that chemists be educated on pollution prevention concepts during their academic training in order for pollution prevention to become a standard in industry.



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## 14. GREEN LIGHTS PROGRAM

### HISTORY

Green Lights was officially launched on January 16, 1991. It is considered the Flagship program of the APPD. There were originally 39 Charter members from major U.S. corporations, but today the partnership has expanded to include public and private organizations of all sizes. There are small and medium-sized businesses; federal, state, and local governments; non-profit groups; schools; universities; and health care facilities. EPA has also developed a series of Ally Programs with the lighting industry and an Endorser Program with organizations that help promote the Green Lights ideas.

### GOAL

The program's goal is to prevent pollution by encouraging U.S. institutions to use energy-efficient lighting technologies.

### PARTICIPATION

There are currently over 1,900 participants in the program, representing over 5 billion square feet of facility space. Participants are required to survey their domestic facilities and upgrade lighting wherever it is profitable and improves or maintains lighting quality. A profitable project is one that - on a facility aggregate basis - maximizes energy savings while providing an annualized internal rate of return (IRR) that is greater than 20 percent. This target is a "floor" rather than a "ceiling;" most lighting upgrades yield 20-40 percent IRRs. Participants must complete their lighting upgrades within 5 years.

The Green Lights program is flexible enough to allow organizations to approach implementation in their own ways. A Green Lights Partner typically forms a team which identifies financial needs, conducts trial installations, and develops the 5 year action plan. Green Lights participants are asked to annually apprise EPA of their progress by using a 1-page Green Lights Implementation Report for each of their lighting surveys and upgrade projects. Green Lights is also the first step in the Energy Star Buildings Program.

### BENEFITS OF PARTICIPATION

On average, Green Lights participants are experiencing rates of return of close to 50 percent. These participants are also saving, on average, 50 percent of the energy associated with their lighting. As of 1995, Green Lights participants are currently saving over \$100 million per year. They have also reduced their energy consumption by an average of roughly 50 percent.

EPA provides technical assistance including: a decision support software package, lighting upgrade workshops and manuals, a financing registry, and ally programs.

EPA recognizes participants for their participation in the program through newsletters, articles, media events, and public service advertisements. Also, EPA encourages participants to take advantage of their own opportunities for public recognition through appropriate use of the Green Lights logo and other materials that can be incorporated into internal communications, public relations, marketing, and advertising.

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## 15. INDOOR ENVIRONMENTS PROGRAM

### HISTORY

The Indoor Environments Program was formed during the summer of 1995 when two existing programs, Radon and Indoor Air, were joined as part of the Agency's streamlining program. These two programs have made considerable progress over the past decade in an effort to lead the public to an increased understanding of the significance of Indoor Air Quality (IAQ) and its effect on public health. IAQ is widely recognized as among the highest environmental risks people face on a day-to-day basis<sup>1</sup>. To address this issue, the Agency uses voluntary relationships with a wide array of public and private organizations as well as the general public to inform individuals and institutions as to the often simple and low-cost steps they can take to reduce risks.

The non-regulatory Indoor Environments Program employs a cooperative partnership program model, enlisting national medical, consumer, public interest, and private sector groups to pursue common goals of public health protection and good business practices. To date, more than 25 national organizations like the American Lung Association, the American Medical Association, and the National Association of Counties have established partnerships with the Indoor Environments Program, and in turn, have results-oriented partnerships with over 600 local affiliates, States, and communities.

Using the best science available, the Indoor Environments Program develops and disseminates information, guidance and solution-based technologies. The Program serves as a catalyst for action by guiding research, using innovative and creative risk communication tools, and building public/private partnerships.

### GOALS

Our primary goal is to:

- Ensure that the air quality in all indoor environments will protect and promote human health and welfare.

This goal is accomplished by: establishing and prioritizing quantitative public health targets for indoor air contaminants using state-of-the-art scientific and policy analysis; developing and implementing an action plan to modify the legal, economic, and institutional arrangements through which indoor environments are created so that these arrangements enable and support improvements in indoor air quality; improving public awareness of and support for indoor air quality and promoting action by targeted publics; obtaining commitments from manufacturers to create a steady improvement in products and technologies which affect indoor air quality; and developing data and information to fill existing knowledge gaps through scientific and technical studies and by coordinating and guiding research.

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<sup>1</sup>Unfinished business: a comparative assessment of environmental problems. U.S. EPA, Office of Policy Analysis, Office of Policy, Planning and Evaluation. Washington, DC: U.S. Government Printing Office; 1987. And, Reducing risk: setting priorities and strategies for environmental protection. U.S. EPA, Science Advisory Board, SAB-EC-90-021. Washington, DC: U.S. Government Printing Office; 1990.

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The Indoor Environments Program has identified the following environmental milestones to date:

- By 2005, 27 million homes will have been voluntarily tested for radon with corrective actions taken in 1 million homes, and 1.5 million new homes will have been built with radon-resistant features, resulting in a 25 percent reduction from 1985 levels in the number of Americans exposed to elevated radon in their homes.
- By 2005, children's exposure to Environmental Tobacco Smoke will decrease through voluntary actions in the home. The proportion of households in which young children are regularly exposed to smoking will be reduced to 15 percent from over 39 percent in 1986.
- By 2005, EPA will have reached agreements with manufacturers to substantially reduce emissions from 10 or more products whose emissions create a relatively high adverse impact on indoor air quality and public health from a baseline of one product in 1974.
- By 2005, 3,000 or more school or commercial buildings known to EPA will have indoor air quality management plans promoted by EPA from a baseline of zero buildings in 1995.
- By 2005, EPA will develop a database of environmental, building, occupant and ventilation parameters in 300 or more buildings, from a baseline of 30 buildings in 1995, to assist in the development of public and private actions designed to improve indoor environments.

#### **BENEFITS OF PARTICIPATION**

When an organization becomes a cooperative partner with the Indoor Environments Program, it gains access to a myriad of skills, public health expertise, and communication techniques which the EPA and other Indoor Environments partners have used to advance public knowledge and action. It allows the partners to enhance their ability to achieve their organizational mission.

#### **PROGRESS**

To date, through the results of a public information campaign, 73 percent of the American public is aware of radon. 10.2 percent of the public has tested their home for radon, while over 300,000 American homes have been fixed to reduce radon levels. Over 500,000 homes have been built using radon-resistant construction methods. At least 18,000 state and local officials, private sector personnel, and building owners and managers have been trained to address indoor air problems.

#### **FUTURE**

In the future, the Indoor Environments Program will continue to establish effective partnerships with organizations representing a range of target audiences to provide citizens and industry with the information they need to take steps to reduce their risks from indoor air problems. This program will also continue to work toward the goal that pollution prevention, and the efficient resolution of indoor air quality problems of all types, will become a routine aspect of the design, construction, maintenance, and operation of public and commercial buildings, homes, health and day care facilities, educational institutions, and all indoor spaces.

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## 16. LANDFILL METHANE OUTREACH PROGRAM

### HISTORY

The Landfill Methane Outreach Program (LMOP) was launched on December 1, 1994, with 13 State Allies and 12 Utility Allies. A third component of the LMOP, the Industry Ally Program, was launched on April 10, 1995, with over 30 industry allies. These Charter LMOP State, Utility, and Industry Allies have been working with EPA to overcome the barriers to environmentally and economically beneficial landfill gas energy recovery. Since its inception, the LMOP has provided information and project facilitation services to numerous organizations, including public, private, and individuals.

Landfills are the largest source of anthropogenic methane emissions in the U.S., constituting almost 40 percent of these emissions each year. Methane is a potent greenhouse gas; each pound of methane emitted from a landfill is about 25 times more effective at trapping radiation in the atmosphere than a pound of carbon dioxide. Recovery and use of methane from landfills substantially reduces these emissions while capturing their energy value. EPA estimates that up to 750 landfills could economically recover their methane for energy, yet only about 130 projects are in place.

### GOAL

The LMOP's goal is to spur development of environmentally and economically beneficial landfill gas-to-energy projects across the country by overcoming barriers.

### PARTICIPATION

State energy and environmental agencies participate as State Allies, which work with EPA to identify and implement options to enhance landfill gas energy recovery. There are currently 16 State Allies in the LMOP. Investor-owned and municipal utilities and electric cooperatives participate as Utility Allies, which work with EPA to develop strategies for taking advantage of the best opportunities to add landfill gas to utility energy portfolios. There are currently 13 Utility Allies in the LMOP. Landfill gas-to-energy developers, consultants, equipment suppliers, other project development service companies, and (potential or existing) landfill gas energy and users participate as Industry Allies. Industry Allies work with EPA to formulate aggressive landfill gas development or use strategies, and designate representatives for EPA's Expert Network. There are currently over 51 Industry Allies in the LMOP.

### BENEFITS OF PARTICIPATION

EPA recognizes LMOP participants through newsletters, articles, medial events, and public service advertisements, increasing public awareness of their efforts to reduce greenhouse gas emissions while developing a renewable energy resource. EPA also provides implementation support for each step of the Program. EPA has developed many handbooks and information tools, including the Project Development Handbook, state-by-state profiles of candidate landfills, and Landfill Gas Energy Recovery Project Evaluation Software.

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## 17. NATURAL GAS STAR PROGRAM

### HISTORY

The Natural Gas STAR Program is a voluntary program that works closely with the natural gas industry to reduce emissions of methane (the primary component of natural gas). The program consists of two initiatives, one focused on the transmission and distribution sectors (T&D) launched in 1993, and the other concentrating on the production and processing sectors launched in March, 1995. Natural Gas STAR encourages companies to adopt cost effective best management practices (BMPs) that reduce leaks and losses of natural gas. Partners are also encouraged to consider implementation of "additional" BMPs that may be profitable for their companies. In this capacity, Natural Gas STAR works as a very effective technology transfer program for promoting innovative processes and technologies.

Leaks and emissions from the natural gas industry are large sources of anthropogenic methane emissions in the U.S., constituting almost 11 percent of these emissions each year. Methane is a potent greenhouse gas; each pound of methane emitted from the natural gas industry is about 25 times more effective at trapping radiation in the atmosphere than a pound of carbon dioxide.

### GOAL

The Natural Gas STAR Program's goal is to reduce emissions of natural gas using cost-effective pollution prevention processes and technologies. It is estimated that the Program will reduce emissions by more than 35 billion cubic feet (Bcf) worth an estimated \$70,000,000 by the year 2000. This quantity of gas could heat 500,000 homes, and equates to the removal of 3,000,000 cars from U.S. roads.

### PARTICIPATION

The Natural Gas STAR Program currently has 53 partners (44 in the T&D Program, 9 in the Producers Program) representing:

- 63 percent of transmission company pipeline mileage,
- 30 percent of distribution company pipeline mileage, and
- 25 percent of U.S. natural gas production.

To date, the Natural Gas STAR Program has reduced emissions by over 4 billion cubic feet, equal to approximately \$8 million. This is enough gas to heat 55,000 homes per year, equating to the removal of 330,000 cars from our nations roads.

### BENEFITS OF PARTICIPATION

EPA provides support for Partners by assisting with program implementation through workshops, newsletters, and public service announcements; providing Partners with technical expertise on new technologies and processes; removing unjustified regulatory barriers; providing Partners with public recognition and recognizing Partners for prior practices consistent with the program. Because the industry is geographically dispersed, the program has to contend with many different state laws and regulations. Working closely with regional EPA offices and state agencies, the program has been successful in removing barriers that prevent the use of pollution prevention as a method for reducing emissions.

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## 18. PESTICIDE ENVIRONMENTAL STEWARDSHIP PROGRAM

### HISTORY

In June 1992, the National Integrated Pest Management (IPM) Forum identified the number one constraint to further adoption of IPM as the lack of a national commitment to IPM. At a Congressional hearing on September 22, 1993, the nation got that commitment when the U.S. Department of Agriculture (USDA), EPA, and the Food and Drug Administration (FDA) pledged to have 75 percent of the U.S. agricultural acreage under IPM by the year 2000. USDA, EPA, and FDA also pledged to work with commodity groups to reduce the use of pesticides. The Pesticide Environmental Stewardship Program (PESP) which was at first called the Reduced Risk/Use Initiative and the IPM Initiative, began on that day.

A key part of the PESP is the public/private partnership. This partnership began in December 1994 when EPA, USDA and FDA announced the partnership and more than 20 private organizations signed on as charter members. All organizations with a commitment to pesticide use/risk reduction are eligible to join the PESP, either as Partners or Supporters.

### GOAL

The PESP is a broad effort by EPA, the USDA and the FDA to reduce pesticide use and risk in both agriculture and nonagricultural settings. In September 1993, the three agencies announced a Federal commitment to two major goals:

- Developing specific use/risk reduction strategies that include reliance on biological pesticides and other approaches to pest control that are thought to be safer than traditional chemical methods.
- By the year 2000, having 75 percent of US agricultural acreage adopt integrated pest management programs.

### RESPONSIBILITIES OF MEMBERSHIP/GUIDING PRINCIPLES

All organizations with a commitment to pesticide use/risk reduction are eligible to join the PESP, either as Partners or as Supporters.

Partners are organizations that use pesticides or represent pesticide users. Partners agree to develop and implement formal strategies to reduce the use and risk of pesticides. In particular, Partners agree that their pesticide use will be tailored to specific sites, crops, and regions of the country. Partners further commit themselves to define and implement their strategies in a timely fashion and to report regularly on progress. Associations of pesticide users agree that members will use the safest, most effective pest management practices available.

Supporters are organizations that do not use pesticides, but do have significant influence over pest management practices. Food processors, for example, may influence the use of pesticides on produce they buy, even though they do not apply pesticides to the produce themselves. Supporters may include public interest groups whose constituencies have a strong interest in pesticide use/risk reduction. Unlike Partners, Supporters do not need to develop formal pest management strategies. Instead, they agree to promote programs that facilitate environmental stewardship.

- The partnership is completely voluntary.

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- Partners agree to develop environmental stewardship strategies and implement specific pest management practices designed for pesticide use/risk reduction.
  - The federal government recognizes the need to protect public health and food in the US with efficient, cost-effective pest control.
  - Through research, education, and other means, the federal government will seek to promote and fund the adoption of alternative techniques and practices that enhance pest management and reduce pesticide use and risks.
  - The federal government will integrate the environmental stewardship strategies developed by member organizations into its policies and programs for agriculture and the environment.
  - The federal government will lead by example with its own use practices.

### **PARTICIPATION**

The PESP program has 41 partners. Together, these partners represent at least 45,000 pesticides users.

### **BENEFITS OF PARTICIPATION**

- Joining PESP gives many organizations the opportunity to demonstrate a commitment to environmental stewardship and take steps to put this commitment into practice. Membership may well enhance public perception of the organization, constituent support, and employee morale.
- On joining, each Partner or Supporter is assigned a liaison who serves as that organization's official contact with EPA. The liaison can help obtain information not only about the partnership, but about other EPA programs, policies, and procedures. Further, the contact can help express an organization's concerns to EPA management and ensure that these views are considered as the agency develops pesticide regulations and makes decisions on agricultural policies.
- As funds allow, EPA and USDA provide Partners with seed money to help support pest management practices that reduce pesticide use and risk. In addition, Partners participate in the identification of needs for research on alternative systems for pest management, as provided for in the August 1994 Memorandum of Understanding between EPA and USDA.
- The PESP program will publicly recognize partners and supporters that demonstrate their commitment to environmental stewardship and achieve progress in reducing pesticide use and risk while managing pests cost effectively.

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## 19. PROJECT XL

### HISTORY

President Clinton created Project XL with his March 16, 1995 *Reinventing Environmental Regulation* initiative. This program is designed to give regulated sources the flexibility to develop alternative strategies that will replace or modify specific regulatory requirements on the condition that they produce greater environmental benefits. A May 23, 1995 *Federal Register* notice solicited project proposals and the President subsequently announced the eight projects selected to be in the first group of XL pilots on November 3, 1995. The President described XL projects as giving regulated entities an opportunity to develop models for a new, performance-based environmental management system for the next century--one that emphasizes better bottom-line results for protecting public health and the environment.

### GOALS

EPA is interested in choosing 50 projects to be part of the XL pilot. Each project should be able to achieve environmental performance that is superior to what would be achieved through compliance with current and reasonably anticipated future regulation. A successful proposal will develop alternative pollution reduction strategies that meet eight criteria--better environmental results; cost savings and paperwork reduction; stakeholder support; test of an innovative strategy; transferability; feasibility; identification of monitoring, reporting, and evaluation methods; and avoidance of shifting risk burden. "Cleaner results" can be achieved directly through the environmental performance of the project or through the reinvestment of the cost savings from the project in activities that produce greater environmental results. Explicit definitions and measures of "cleaner results" should be included in the project agreement negotiated among stakeholders. XL pilot projects are intended to test new approaches that could conceivably be incorporated into the Agency's programs or in other industries, or other facilities in the same industry. EPA is therefore most interested in pilot projects that test new approaches that could one day be applied more broadly.

### COMPANY PARTICIPATION

Two of EPA's regulatory reinvention pilot programs include XL for facilities and the industry-wide or sector-based XL program. EPA invites private and public entities or groups of entities regulated by EPA under its various statutory authorities to submit proposals.

### BENEFITS OF PARTICIPATION

Participants are given the flexibility to develop common sense, cost-effective strategies that will replace or modify specific regulatory requirements, on the condition that they produce greater benefits. Based on the premise that these participants know better than the federal government how to reduce their pollution, Project XL reduces the regulatory burden and promotes economic growth while achieving better environmental and public health protection.

### PROGRESS

During the months following the *Federal Register* notice describing Project XL, EPA reviewed several innovative project proposals. On November 3, 1995, the President announced eight projects selected to enter the next stage of selection--the negotiation of a Final Project Agreement--after which project implementation will begin. EPA will work to move to implementation within six months of selection. The Agency expects the first group of projects will be implemented by early Spring 1996.



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### **FUTURE**

Additional XL projects will be selected on a rolling basis; EPA has set a goal of selecting 50 projects. EPA hopes that evaluation of the pilots helps it to identify new approaches that could conceivably be incorporated into the Agency's programs or in other industries, or other facilities in the same industry.

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## 20. THE RUMINANT LIVESTOCK METHANE PROGRAM

### HISTORY

The Ruminant Livestock Methane Program is a collaborative effort between EPA and USDA that promotes cost-effective methods for reducing methane emissions from ruminant livestock. This program was launched upon release of the U.S. Climate Change Action Plan in October 1993.

Domesticated ruminant livestock are responsible for approximately 21 percent of U.S. methane emissions. Methane is produced naturally by ruminant animals as feed is fermented in the rumen by anaerobic bacteria. Because methane is derived from a portion of carbon in the animal's diet, reducing methane emissions generally results in improved animal productivity. The general strategy for reducing methane emissions is to allow more of the carbon in the feed to be routed toward milk and meat production, and less of it toward methane. This program encourages livestock producers to adopt best management practices for improving the efficiency of beef and dairy production thereby reducing methane emissions.

### GOAL

The goal of the Ruminant Livestock Methane Program is to reduce 1.8 million metric tons of carbon equivalent of methane emissions by the year 2000 by improving ruminant productivity. Specific actions for improving productivity include improved grazing management, strategic dietary supplementation, the use of production enhancing technologies, improved animal health, improved genetics and reproduction.

### PARTICIPATION

The program is focusing outreach efforts on cow-calf producers of the beef industry through USDA's Natural Resources Conservation Service (NRCS). Improved management practices are being promoted initially to producers of the southeast and the intermountain west. The program has three main components:

1. Field studies - Researchers are using a methane measurement technique on cattle to refine emissions estimates, identify nutritional deficiencies, test candidate management options for production performance and methane emissions reduction potential, and to document the economics of emissions reduction.
2. NRCS Demonstration Farms - In each of eleven key states, a model farm is being selected to demonstrate the benefits of improved management practices. "Best practices" identified in the field studies will be incorporated into the demonstrations.
3. Outreach and Education - Economic and technical information gathered in the field studies and on the demonstration farms will be incorporated into existing NRCS and state extension programs for use nationwide. Specific tools used for information dissemination include brochures, video, newsletters, demonstrations, workshops, training and site visits.

### BENEFITS OF PARTICIPATION

The main benefit realized by participating producers is improved efficiency of beef production. Because of small profit margins and the competitive nature of the industry, beef producers need to take advantage of every available technical advancement that will enhance their profitability. By participating in this program producers can make a positive contribution to the environment by reducing methane emissions while they

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increase their profits. Additionally, many of the management improvements contribute to conservation of soil and water resources and protection of riparian areas. Participating producers are recognized by EPA for their environmental stewardship which enhances their public image.

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## 21. STATE AND LOCAL OUTREACH PROGRAM

### HISTORY

The State and Local Outreach Program was created in 1989 and incorporated into the CCAP in 1993. This program forms partnerships with state and local governments to help them build their capacities for understanding the impacts of climate change and reducing their emissions of greenhouse gases. State and local authorities are critical players in the effort to reduce these emissions, as they have jurisdiction over activities that create direct and indirect impacts, including land use, transportation, building codes, and waste management. Moreover, states and localities account for a significant percentage of global emissions of greenhouse gases.

### GOALS

The mission of the program is to empower decision-makers at the state and local level to reduce greenhouse gas emissions by providing them with specialized products and services. Through our efforts, states and localities will increase their understanding of risks and impacts of climate change; assess and develop mitigation and adaptation strategies that are cost-effective, environmentally sound, and equitable; and, implement, evaluate, and document program results.

### PARTICIPATION

States become partners by developing inventories of greenhouse gas emissions, which establish a baseline and help forecast future emissions; developing and implementing comprehensive mitigation programs and policy options that comprise State Action Plans; and, implementing innovative demonstration projects.

Cities and counties become partners in the State and Local Outreach Program through initiatives coordinated by the International Council for Local Environmental Initiatives (ICLEI). ICLEI organizes campaigns which provide incentives for local governments to conduct energy audits and emissions inventories, reduce energy consumption, and increase public awareness. One of these initiatives, the Green Fleets Project, provides incentives for energy savings in the transportation sector, while the most recent initiative, the "Cities for Climate Protection Campaign," addresses energy consumption in a host of sectors, including buildings and transportation.

### BENEFITS OF PARTICIPATION

By identifying and implementing cost-effective measures and policies to reduce greenhouse gas emissions, states and localities can simultaneously save energy, save money, foster technology-oriented business growth that helps create jobs, and improve quality of life by alleviating such dilemmas as traffic congestion, shrinking landfill capacity, and air pollution.

The State and Local Outreach Program supports the energy and innovative ideas of states and localities by providing a host of activities and services. These include technical and financial assistance, workshops and training, guidance documents, software tools and analytic models, and opportunities for recognition and profile.

### PROGRESS

Presently, 29 states, plus Puerto Rico, are partners in the Outreach Program:

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\* Alabama \* California \* Colorado \* Delaware \* Hawaii \* Iowa \* Illinois \* Indiana \* Kansas \* Kentucky \*  
Massachusetts \* Maryland \* Maine \* Minnesota \* Missouri \* Mississippi  
\* Montana \* North Carolina \* New Hampshire \* New Jersey \* New Mexico \* New York  
\* Oregon \* Pennsylvania \* Tennessee \* Utah \* Vermont \* Washington \* Wisconsin

At present, 7 cities and counties have joined the Green Fleets project, while 13 either have joined or are expected to soon join the Cities for Climate Protection Campaign. Current participants in either the Green Fleets Project, the Cities for Climate Protection Campaign, or both are:

\* Austin, TX \* Boulder, CO \* Chicago, IL \* Chula Vista, CA \* San Francisco, CA \* San Jose, CA \*  
Santa Monica, CA \* Louisville & Jefferson County, KY \* Miami-Dade County, FL \* Minneapolis, MN \*  
Newark, NJ \* Olympia, WA \* Portland, OR \* Saint Paul, MN \* Prince George's County, MD \* San Diego,  
CA \* Seattle, WA \* Tucson, AZ

Examples of successful innovative demonstration projects include the following:

\* The Outreach Program recently completed a three-year partnership in which it provided financial and technical assistance to the Interstate Renewable Energy Council (IREC). The IREC produced a reference tool for state procurement managers, 'Procurement Guide for Renewable Energy Systems,' that served to increase purchases of renewable energy products and expand business opportunities for several dozen clean technology firms.

\* The "Planet Protection Program," jointly developed by the Outreach Program, EPA's Atlanta office, and the National Retail Hardware Association (NRHA), provides education materials and point-of-purchase displays to some 46,000 hardware stores and home centers in order to encourage consumers to purchase energy efficient home products.

\* The "Environmental Justice and Sustainable Communities Project" provides funding and technical support to low-cost, grass roots endeavors targeted toward low-income neighborhoods, disadvantaged communities, and Indian reservations. In 1995, eight projects are helping residents improve their quality of life while simultaneously reducing their emissions of greenhouse gases.

\* The Outreach Program now offers a Fax-on-Demand Line, in which any interested party can call the following number - 202-260-2860 - and receive free documents pertaining to the program and to climate change issues and policies.

### **FUTURE**

The State and Local Outreach Program is examining opportunities to form partnerships with new constituency groups and to leverage activities of state and local organizations. We will continue to increase the number of states and localities that are partners in the program and to develop a number of analytic, communications and outreach projects. Outreach efforts include organizing guest panels at conferences to highlight successful voluntary efforts by states and localities to reduce greenhouse gas emissions, distributing a program newsletter, and participating in conferences and speaking engagements.

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## 22. TRANSPORTATION PARTNERS

### HISTORY

The Transportation Partners program was initiated as part of the Climate Change Action Plan which directed EPA to develop an innovative, non-regulatory approach to reduce carbon dioxide emissions from the transportation sector -- the fastest-growing source of greenhouse gases in the US. The program was started in 1995 to support the voluntary efforts of local officials, citizens, and businesses to improve the efficiency of transportation systems and reduce the demand for vehicle travel.

### GOAL

The goal of the Transportation Partners program is, through voluntary efforts, to reduce carbon dioxide emissions from the transportation sector by reducing vehicle miles traveled. Effective measures such as telecommuting, transit- and pedestrian-oriented community design, and market-based reforms also have significant side benefits of reducing traffic congestion, increasing worker productivity, making neighborhoods safer and more livable, and generating revenues that can reduce the funding for transportation infrastructure without increasing general taxes.

### PARTICIPATION

The Transportation Partners program has partnerships with approximately 100 local governments and citizens' organizations. The program also has 6 cooperative agreements with Transportation Partners Allies. These Allies are non-governmental organizations that provide technical support and outreach to participants in the program.

### BENEFITS OF MEMBERSHIP

The program provides members with technical and outreach support to assist them in implementing transportation measures that they have decided are appropriate for their communities. The program also provides members with public recognition of their efforts to reduce carbon dioxide emissions.

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## 23. U.S. INITIATIVE ON JOINT IMPLEMENTATION (USIJI)

### HISTORY

Recognizing the enormous potential for cost-effective greenhouse gas (GHG) emission reductions in other countries, the U.S. created the U.S. Initiative on Joint Implementation (USIJI) as part of the CCAP. USIJI is a pilot program to help establish an empirical basis for considering approaches to joint implementation. The program provides a flexible, nonregulatory approach to encouraging international partnerships in environmentally sound projects that reduce or sequester GHG emissions and promote sustainable development.

### GOALS

USIJI has several objectives including encouraging the development and implementation of cooperative, voluntary projects between U.S. and foreign partners aimed at reducing or sequestering GHG emissions, especially projects that promote technological cooperation and sustainable development. The pilot program is also intended to test and evaluate methodologies for measuring, tracking, and verifying costs and benefits of joint implementation projects and it establishes an empirical basis to contribute to the formulation of international criteria for joint implementation. Through participation in USIJI projects, countries are encouraged to adopt more complete climate action programs.

### PARTICIPATION

The groundrules for USIJI state that U.S. participants may include individuals, companies or organizations as well as any federal, state, or local government entity. Foreign partners can include any country that has signed, ratified or acceded to the FCCC. The groundrules also establish specific criteria for project acceptance. Determination of the acceptability of the projects is made by an eight member Evaluation Panel, co-chaired by the Environmental Protection Agency and the Department of Energy with representation by the U.S. Agency for International Development, and the Departments of State, Agriculture, Commerce, Interior, and Treasury.

### BENEFITS OF PARTICIPATION

Information gained from U.S. participants' projects will help contribute to the development of an international program for joint implementation and any future U.S. program on joint implementation. Participants are assured that any emissions reduced and sequestered by their USIJI projects will be tracked and recorded. USIJI participants will also receive public recognition for their efforts to reduce the threat of climate change and contribute to sustainable development. Technical assistance will be provided to participants in the areas of host country acceptance, establishing a greenhouse gas emissions baseline and measuring greenhouse gas emissions reduced or sequestered and guidance on monitoring and verifying greenhouse gas emissions.

### PROGRESS

In February 1995, seven successful projects were announced and eight additional proposals were placed in development. The seven projects accepted in the first-round solicitation are: a preservation and sustainable forest management project in Belize; a renewable energy and two preservation and sustainable forest management projects in Costa Rica; a fuel switching/energy efficiency project in the Czech Republic; a renewable energy project in Honduras; and an afforestation project in Russia.

Current projects represent private investments of more than \$40 million and represent uniquely diverse partnerships among foreign participants and U.S. businesses, nongovernmental organizations, and

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governments. Many of these projects involve innovative technology and practices in settings that may open new market opportunities.

Other significant milestones include:

A Joint Statement of Intent on joint implementation signed by U.S. Vice President Al Gore and Costa Rica President Jose Maria Figueres on September 30, 1994.

The close of second-round solicitation on July 29, 1995, following a Secretariat-sponsored workshop for 200 potential round-two domestic participants. Twenty-one projects were submitted and an announcement of accepted projects is planned for early November 1995. Additional proposals will be solicited in early 1996.

USIJI is the first and most developed joint implementation pilot program worldwide. Its international outreach activities and workshops have positively influenced international understanding of joint implementation and its broad acceptance by Parties to the Framework Convention on Climate Change. Other countries have announced pilot efforts closely modeled on USIJI. In light of the successful activities to date, an international pilot program was adopted in Berlin at the first Conference of the Parties in the Spring of 1995. Some developing countries have expressed open support for an international joint implementation pilot, including the presidents of seven Central American countries. Several participating countries - notably Costa Rica - have responded to the opportunity USIJI represents by moving forward aggressively on their own programs for reducing GHGs.

#### **FUTURE**

USIJI is completing a technical assistance program to develop specific guidelines and provide assistance to selected projects for emissions accounting, monitoring, and verification. The Secretariat also expects to facilitate host country involvement in proposals and assist participants in obtaining project financing through the Export-Import Bank, the Overseas Private Investment Corporation, and other financial institutions. USIJI will continue to solicit projects which seek to promote and enable the development of flexible and innovative market-based international projects to reduce GHG emissions and promote sustainable development.



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## 24. VOLUNTARY ALUMINUM INDUSTRIAL PROGRAM (VAIP)

### HISTORY

The EPA Voluntary Aluminum Industrial Partnership (VAIP) is an innovative environmental stewardship and pollution prevention program developed jointly by the EPA and the U.S. primary aluminum industries. Companies joining the VAIP commit to make reductions in perfluorocarbon gas emissions (PFCs), potent greenhouse gases that may remain in the atmosphere for thousands of years. The VAIP Program was launched in April, 1995, with 10 Partners. Since then, two additional companies have joined the VAIP. In total, the VAIP Partners represent 96 percent of the U.S. primary aluminum production capacity.

Aluminum production, or smelting, is the source of emissions of two PFCs, tetrafluoromethane (CF<sub>4</sub>) and hexafluoroethane (C<sub>2</sub>F<sub>6</sub>). Both CF<sub>4</sub> and C<sub>2</sub>F<sub>6</sub> are very effective at trapping radiation in the atmosphere, with global warming potentials of over 6,000 and 10,000, respectively, over a 100 year time horizon. EPA estimates that PFC emissions from U.S. aluminum smelting totaled four million metric tons of carbon equivalent in 1990. EPA is working with the VAIP Partners to develop accurate and comparable emissions measurements for the 22 operating U.S. primary aluminum smelters.

Partners achieve PFC reductions through a mix of management and incremental technological changes, employing the best options on a smelter-by-smelter basis. These actions reduce the frequency and duration of "anode effects," temporary electro-chemical disruptions in the production process that are the source of PFC emissions. Because anode effects waste energy, actions to reduce them--and thereby reduce PFC emissions--can mean energy savings for VAIP Partners. Elimination of anode effects may be technically possible in the future, but today a limited number is important to smelter operation.

### GOAL

The VAIP Program's goal is to reduce PFC emissions from U.S. primary aluminum smelting 45 percent by 2000--equivalent to 1.8 million metric tons of carbon--using cost-effective approaches that make economic and environmental sense for the Partners.

### PARTICIPATION

Twelve of the 13 U.S. primary aluminum producers have joined the VAIP as Program Partners. These companies represent 96 percent of the U.S. primary aluminum production capacity. They also represent the full range of primary aluminum smelting technologies and practices, and therefore have different capacities to reduce PFC emissions.

### BENEFITS OF PARTICIPATION

VAIP Partners benefit from joining the Program in several ways. First, actions taken to reduce PFC emissions can mean energy savings for VAIP Partners, as well as reductions in non-PFC emissions. Second, EPA provides VAIP Partners with recognition for taking the initiative to prevent atmospheric pollution. In addition, the VAIP brings together experts from industry, government, and academia to answer fundamental questions about the processes that lead to PFC emissions, the best way to measure these emissions, and how to most cost-effectively reduce them. As a result, EPA is funding anode effect research at the Massachusetts Institute of Technology (MIT) and gas standards development at the National Institute of Standards and Technology (NIST), as well as conducting measurements at many U.S. smelters.

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Finally, the VAIP Program has been designed to reflect the diversity within the primary aluminum industry as well as the differences between this and other industries. The VAIP agreement is flexible, allowing each partner to tailor the Program to reflect their particular mix of technology, management structure, and operation practices, and to be recognized for past as well as future accomplishments.

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## 25. VOLUNTARY STANDARDS NETWORK

### HISTORY

Established in 1993 with the support of Administrator Carol Browner, the EPA Standards Network is a cross-Agency mechanism to coordinate EPA interests in international voluntary standards. A major focus of the Network is Agency participation in the development and implementation of the ISO 14000 Environmental Management Standards. The Standards Network also coordinates with other Agency initiatives such as Project XL, the Environmental Leadership Program and the Common Sense Initiative.

### GOALS

The EPA Voluntary Standards Network, though internally focused to coordinate Agency representation in the development of voluntary standards, also aims to further Agency-wide objectives within the Standards development process. Thus, the Network advocates pollution prevention, a commitment to compliance, continuous environmental improvement, the use of environmental technologies, greater stakeholder participation in the standards development process and community involvement in standards implementation.

### PARTICIPATION

Unlike traditional EPA voluntary programs, no sign-up is required. The private sector and standards developing organizations are driving this work and the EPA Standards Network is an internal effort to coordinate and respond to our customers' (your) growing interest in this area. Parties, however, are interested in EPA positions and policies with regard to standards development, use and eventual implementation and certification. The EPA Standards Network can assist in this area by directing this interest to the proper contact, reflecting Agency policies to interested parties and obtaining valuable feedback from Network members to respond to issues raised as appropriate.

### PROGRESS

To date, members of the Network have made significant contributions to the standards effort on behalf of the Agency, including new ISO language on preventing pollution and the commitment to regulatory compliance. Both of these concepts were accepted by the international community in large measure due to the active participation from Network members.

The Network has broadened stakeholder participation and community involvement concerning the implementation of ISO 14000. Outreach to environmental organizations, community groups and to small and medium sized businesses continues to be a priority of the Network. An Environmental Technology Initiative grant to the American National Standards Institute (ANSI) was secured through the Network to support ISO 14000 workshops nationwide and targeted to these groups. The Network has also organized EPA participation in major ISO 14000 conferences. EPA Standards Network Fact Sheets on the Role of Voluntary Standards and ISO 14000 available to the public through the Pollution Prevention Information Clearinghouse (202/260-1023).

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## 26. WASTE MINIMIZATION NATIONAL PLAN

### HISTORY

The Waste Minimization National Plan, finalized in November of 1994, promotes a long-term effort to minimize the generation of hazardous constituents in Resource Conservation and Recovery Act (RCRA) wastes by emphasizing source reduction and environmentally sound recycling over waste management. It evolved from both the Hazardous and Solid Waste Amendments of 1984 and the Pollution Prevention Act of 1990, each of which emphasized a national policy to reduce or eliminate the generation of hazardous constituents in waste, rather than managing them after they are generated. The Waste Minimization National Plan promotes the goals of the current Administration's Reinventing Government program in providing flexibility to comply with environmental regulations.

### GOALS

The Plan sets national goals for reducing constituents in hazardous waste that are persistent, bioaccumulative, and/or toxic by 25 percent by the year 2000 and by 50 percent by the year 2005. Generators, whose hazardous wastes contain these hazardous constituents, have flexibility to set their own individual facility goals and baseline years and measure their own progress in a manner that is tailored to the facility involved.

To accomplish these goals, six objectives have been established in the Plan:

Objective 1: Develop a framework for setting national priorities; identify constituents of concern and develop flexible screening tools for identifying priorities at individual facilities.

Objective 2: Promote multimedia environmental benefits and prevent cross-media transfers.

Objective 3: Demonstrate a strong preference for source reduction; shift attention to the nation's hazardous waste generators to reduce hazardous waste generation at its source.

Objective 4: Clearly define and track progress; promote accountability for EPA, states and industry.

Objective 5: Involve citizens in waste minimization implementation decisions.

### PARTICIPANTS

- ▶ Hazardous Waste Generators and hazardous waste managers who are required to comply with hazardous waste regulations.
- ▶ Organizations willing to commit to a specific waste minimization goal for persistent, bioaccumulative, and/or toxic (PBT) constituents.
- ▶ Government agencies and non governmental organizations (NGOs).

### PROGRESS

- ▶ Although EPA will be measuring the overall progress toward achieving these goals at a national level, individual organizations will be taking the lead in setting individual goals and measuring their own results.

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- ▶ While the Waste Minimization National Plan is a relatively new program, Agency efforts are ongoing in helping organizations identify persistent, bioaccumulative and toxic constituents, and methods to minimize these constituents in their waste. The draft report "Setting Priorities for Minimization of Combusted Hazardous Waste," available in early 1996, will assist your organization in identifying these constituents in wastes managed by combustion.
  - ▶ An EPA team including headquarters, regional, and state staff has also been assigned to develop hazard-based screening tools to assist stakeholders in identifying their waste minimization priorities for all types of hazardous wastes. The team plans to make these tools available in Spring/Summer 1996.
  - ▶ EPA is working with several EPA regions and states to develop training modules for government officials to successfully encourage pollution prevention at facilities during permitting, inspections, and enforcement discussions.
  - ▶ Although not components of the Plan, a number of additional resources also will be available in helping organizations meet the Plan's initiatives; some examples include: a metal plating technical report, including detailed descriptions of the wastes generated by metal plating operations and the waste minimization methods currently employed by the United States and other Organization for Economic Cooperation and Development (OECD) member countries, and; waste minimization practices for selected residuals in the petroleum refinery industry, covering both source reduction and recycling techniques implemented by the petroleum industry.

#### **BENEFITS**

EPA has conducted numerous analyses which point to significant cost savings for many organizations who have made a concerted effort to implement a waste minimization program. The Agency projects that similar results can be achieved by participants in the Waste Minimization National Plan. Two programs recently introduced in the State of California--The Santa Clara Valley Manufacturing Group (SCVMG) Pollution Prevention Pilot Project and the San Francisco Green Business program--have established goals comparable to the Waste Minimization National Plan and have been successful in attracting area businesses. Current participants include IBM Corporation, Lockheed Martin Missiles & Space, and Westinghouse Electric.

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## 27. WATER ALLIANCES FOR VOLUNTARY EFFICIENCY (WAVE)

### HISTORY

The concept of a voluntary program dedicated to achieving water use efficiency originated in the Office of Water in the wake of the success of other voluntary programs. The program was designed to be similar to Green Lights (an energy-saving program), but in this case to promote more efficient water use. In December 1992, EPA held a press conference to announce its intent to start the Water Alliances for Voluntary Efficiency (WAVE) program.

Hotels and lodging associations were targeted by EPA for this program. These associations had expressed interest in the idea, and EPA thought that hotels and lodging establishments could help educate the public. Hotels participating in the WAVE program provide information about water efficiency to their customers. There are currently 26 hotel chains participating in the WAVE program.

### GOALS

WAVE strives to benefit the lodging industry and the environment by:

- Reducing water and energy consumption through the installation of water-efficient equipment
- Linking water-use efficiency to reduced costs
- Informing hotel guests and employees about the benefits of water efficiency

In the long term, EPA wishes to focus national attention on the importance of water and the need for more efficient water use. For this reason, EPA hopes to eventually expand the scope of the WAVE program to include schools, hospitals and businesses.

### PARTICIPATION

Hotels and motels that choose to take part in the WAVE program must sign a Memorandum of Understanding (MOU) with EPA. WAVE participants agree to:

- Appoint a WAVE Implementation Manager
- Survey water use devices in all facilities
- Consider options for achieving greater water use efficiency and implement those options that maximize efficiency - provided they are profitable and do not compromise business operations
- Upgrade water use devices so that 90 percent of the projected reductions in water use (by volume) are realized within five years
- Incorporate water-efficient devices in new facility design
- Provide annual information to EPA on efficiency measures implemented and the related savings in water, energy, and costs
- Inform customers and employees about the benefits of water use efficiency

### BENEFITS OF PARTICIPATION

The program provides members with water and energy saving ideas that will actually result in a profit to WAVE partners. By changing to water efficient equipment and procedures, a hotel or motel can cut its water use by up to 30 percent. Most of the time the costs of investments in such water-efficient equipment can be recovered in three years or less. Promising opportunities for cost-effective savings include changes in

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plumbing fixtures, cooling systems, kitchens, laundries, and landscaping. EPA also provides the following products and services:

- Water Management Software - a computer software package called WAVE Saver that allows WAVE Partners to survey and track water use in facilities, evaluate water efficiency options, and choose the most cost-effective water efficiency upgrade.
- Training Workshops - meetings that will inform hotel management on the benefits of water efficiency and provide technical information to facility engineers.
- Supporter Program - WAVE supporters are equipment manufacturers, water management companies, and utilities that have agreed to educate customers about water efficiency and assist WAVE Partners.
- Endorser Program - membership associations and other organizations that support WAVE.
- Public Recognition - WAVE recognizes program participants through public-service advertisements and other promotional materials.

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## 28. WASTEWISE PROGRAM

### HISTORY

WasteWi\$e was conceived in the fall of 1992 by the Office of Solid Waste and Emergency Response. EPA's research showed that reducing materials used and solid waste generated could save companies money on purchasing, mailing, disposal, labor, and transportation costs. This idea prompted a discussion between EPA and an ad hoc group of business representatives to decide how to structure a voluntary solid waste reduction program. Through consultation with businesses and others, EPA designed a flexible program which allows companies to set their own waste reduction goals based on their circumstances.

WasteWi\$e was launched January 1, 1994 with a letter from the EPA Administrator to the Fortune 500 industrial and service companies. Current membership exceeds 400 organizations and includes companies from 35 different business sectors.

### GOAL

Through reducing municipal solid waste, energy and natural resources are conserved, and pollution is prevented. WasteWi\$e partners reduce municipal solid waste in three ways:

- Waste prevention (source reduction)
- Collecting recyclables
- Increasing the manufacture or purchase of recycled products

### RESPONSIBILITIES OF MEMBERSHIP

WasteWi\$e partners provide EPA with their waste reduction goals and a yearly progress report. Goals are updated each year, although many companies choose to continue implementation of initial goals for more than one year. Company goals must include three significant waste prevention actions, an action to establish or improve a recycling program, and an action to increase the purchase or manufacture of recycled products. Companies may start gradually with a pilot program at a single facility, if desired.

The annual reporting form asks companies to describe what they did during the previous calendar year and provide the following:

- Amount of waste prevented
- Amount of recyclables collected
- Description of buy-recycled activities and example purchases.

Any company, institution, or non-profit organization may join WasteWi\$e. Trade associations and other membership organizations may join as Endorsers which promote the program to their members.

### BENEFITS OF MEMBERSHIP

**Cost Savings** -- Companies have saved millions of dollars through their WasteWi\$e activities. Bank of America saved \$1 million in 1994 through paper reduction efforts that included two-sided printing of customer statements. NYNEX saved \$2.5 million through similar paper reduction efforts. Quaker State is saving \$600,000 annually by changing the shape of a bottle to allow more bottles to fit in each carton; this reduces packaging material by 15 percent.



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**Technical Assistance** -- EPA facilitates technical assistance for partner companies through a helpline, a newsletter entitled WasteWiSe Update, "how-to" publications, a peer exchange for partners to share information directly, workshops, and a limited number of on-site waste assessments.

**Recognition** -- EPA provides recognition for outstanding achievements and publicizes program successes through newsletters, press releases and public service announcements. Partners may use the WasteWiSe logo in their own promotion and advertising.

