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Environmental Protection
Agency

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Office of Pollution Prevention and Toxics



EPA's Design For The Environment Program Partnerships For a Cleaner Future

The "Design for the Environment" logo, which consists of a globe with the text "Design for the Environment" curved around it and "U.S. EPA" below it. The background of the entire page is a detailed stippled illustration of a city skyline with various buildings and structures.

Design for the Environment
U.S. EPA

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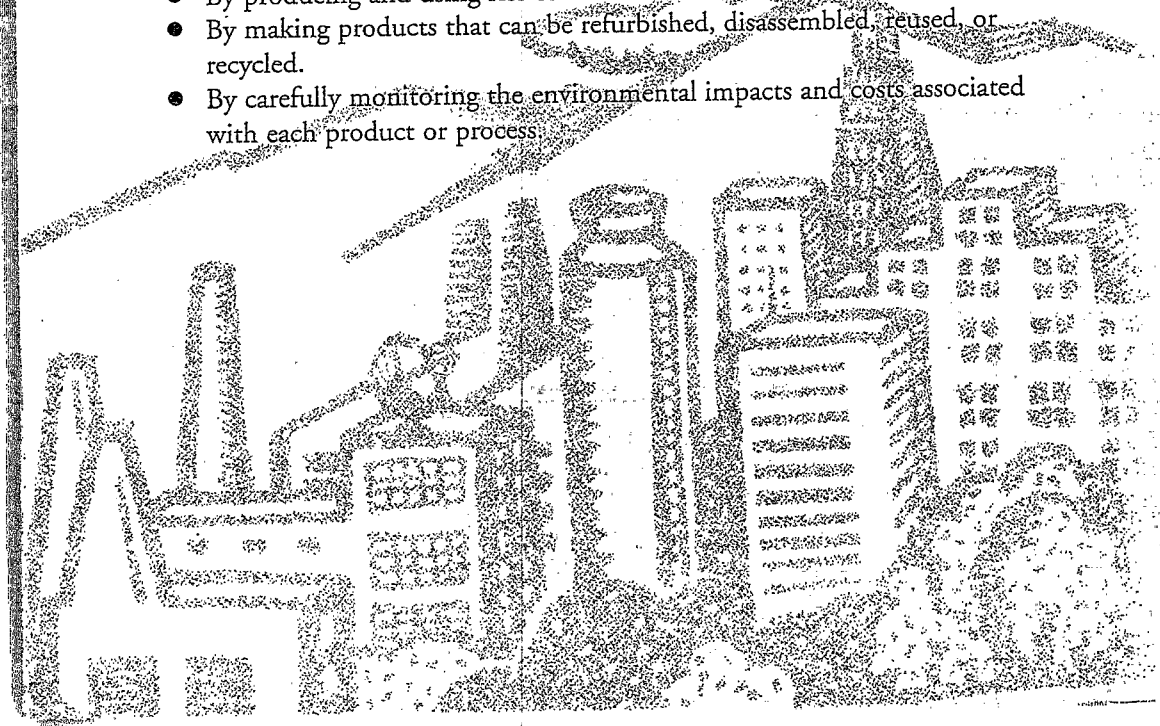
Why Design for the Environment?

Businesses operating in the 1990's face a variety of competing demands—keeping costs low and quality high, staying competitive in a global marketplace, and meeting consumer preferences for more environmentally friendly products.

Designing for the environment is an effective strategy for organizing and managing these challenging demands. Building on the design for the environment (DfE) concept pioneered by industry, the Environmental Protection Agency's (EPA's) DfE program helps businesses incorporate environmental considerations into the design and redesign of products, processes, and technical and management systems.

How does a business "design for the environment?"

- By implementing pollution prevention, energy efficiency, and other resource conservation measures.
- By producing and using less-toxic and non-toxic materials.
- By making products that can be refurbished, disassembled, reused, or recycled.
- By carefully monitoring the environmental impacts and costs associated with each product or process.



What is EPA's DfE Program?

Through the DfE program, EPA develops and provides businesses with information to make environmentally informed choices and design for the environment. DfE forms voluntary partnerships with industry, public interest groups, universities, research institutions, and other government agencies to develop environmentally friendly alternatives to existing products and processes. Within each project, the DfE program ensures that the information reaches the people who make the choices—from managers to industrial design engineers to materials specifiers and buyers.

What DfE Projects are Underway?

EPA's DfE projects include broad institutional efforts aimed at changing general business practices, as well as cooperative projects with trade associations and businesses in specific industries. Some of these projects are described below.

Cooperative Industry Projects

DfE is working with several industries to identify cost-effective pollution prevention strategies that reduce risks to workers and the environment. DfE helps businesses compare and evaluate the performance, cost, pollution prevention benefits, and human health and environmental risks associated with existing and alternative technologies. The goal of these projects is to encourage businesses to consider and use cleaner products, processes, and technologies.

A typical industry project includes developing a Cleaner Technologies Substitutes Assessment (CTSA) and a communication and implementation strategy. CTSA's provide detailed environmental, economic, and performance information on traditional and alternative manufacturing methods and technologies. To help industry implement some of the new technologies identified during CTSA development, DfE provides a variety of outreach tools, which may include fact sheets, bulletins, pollution prevention case studies, software, videos, and training materials.

Industry Tools

CTSA Methodology and Resources Guide—DfE is developing a generic Cleaner Technologies Substitutes Assessment and guidance manual to help companies perform their own substitute assessments.

Design for the Environment: Building Partnerships for Environmental Improvement—DfE is developing a guidance manual that outlines a step-by-step approach to convening partnerships to cooperatively address environmental concerns.

tial health and environmental risks, generates large volumes of hazardous waste, and uses substantial amounts of water and energy. The project is working with 750 PWB manufacturers to examine alternative technologies that reduce or eliminate these impacts. The project has demonstrated seven promising alternatives at 26 sites across the United States.

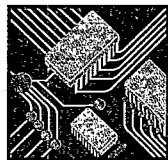
Dry Cleaning Project



A DfE partnership with the dry cleaning industry and public interest groups is working to reduce

exposure to perchloroethylene (perc). Traditionally used by most of the nation's 34,000 commercial dry cleaners, perc is a chemical solvent that poses potential health and environmental concerns. DfE has established two demonstration sites to collect data on the performance, customer satisfaction, and cost of a non-toxic alternative technology called wet cleaning. Other alternative cleaning methods being examined include liquid carbon dioxide, ultrasonic, and microwave

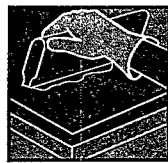
Printed Wiring Board Project



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 components. The traditional electroless copper-process for manufacturing PWBs uses toxic chemicals that pose poten-

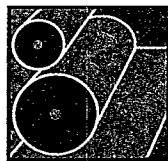
drying technologies. DfE is also developing a pollution prevention/waste minimization manual and a training program to promote the design and operation of "greener" dry cleaning facilities.

Screen Printing Project



DfE encourages the nation's 20,000 graphic art screen printers to consider environmental and worker safety concerns along with cost and performance when purchasing materials and designing systems. One way to reduce the environmental impact of screen printing is to replace hazardous chemicals with environmentally-safer substitutes. Working together, EPA and the screen printing industry evaluated 14 screen reclamation systems and are identifying and publicizing pollution prevention opportunities.

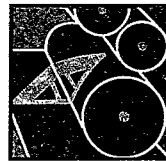
Flexography Project



Flexography is a process used primarily for printing on paper, corrugated paperboard, or plastic consumer packages and labels. Conventional flexographic inks contain solvents made of volatile organic compounds that can pose risks to human health and the environment. DfE is working in partnership with seven trade associations representing over 1,600 flexographic printers and the ink manufacturers to evaluate alternative

solvent, waterborne, and ultraviolet-cured flexographic ink technologies. The goal of this project is to help printers make more environmentally informed decisions about the ink technologies they use.

Lithography Project



There are 54,000 lithographic printing shops in the United States that typically use petroleum solvents to clean their presses. These solvents, called blanket washes, contain volatile organic compounds, which can be unhealthy to breathe and contribute to smog formation. To help small business printers make more informed decisions about the blanket wash products used in their shops, the DfE Lithography Project partners worked together to evaluate 37 different blanket wash products. The results suggest that some blanket washes are safer for workers and the environment, and can lower costs.

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 the metal's surface. Typical metal finishing processes produce air emissions, wastewater effluent, and excessive solid waste. This project has produced a variety

of pollution prevention materials for the nation's 13,500 metal finishers, including an industry profile, a regulatory guide, and waste assessment tools. The project has also initiated a series of demonstration projects to examine emerging pollution prevention alternatives, including chrome electroplating projects at four sites in Michigan and Ohio.

Institutional Projects

Successful pollution prevention programs can result in significant economic and environmental savings. Because these savings often are not adequately measured, they are frequently omitted from business planning activities. EPA is working with the accounting, insurance, and finance industries to identify and quantify the economic and environmental savings that can be achieved by implementing innovative pollution prevention methodologies. Current projects include:

Environmental Accounting Project



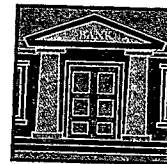
EPA is working with the private sector to develop new tools that will help businesses incorporate environmental costs and benefits into managerial accounting and capital budgeting practices. These tools will allow businesses to reduce their environmental costs while improving their environmental performance.

Insurance/Risk Management Project



EPA has completed a project with the American Institute of Chartered Property Casualty Underwriters (AICPCU) to incorporate pollution prevention information into AICPCU's risk management certification program. EPA is also convening an informal industry advisory panel to help identify additional opportunities to work with the insurance and risk management industries.

Financing Project



The financial community has traditionally associated environmental investments with *liability* rather than with *opportunity*, which has limited the ability of some businesses to adopt modern pollution prevention practices. EPA is helping businesses and the financial community estimate the returns from pollution prevention investments.

Cooperative Government Project

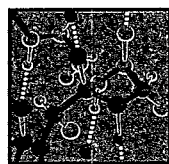
Cleaning Products



EPA and the U.S. General Services Administration are collaborating on a long-term project to promote

the use of environmentally preferred cleaning products. This effort involves developing standards for cleaning products, performing integrated risk assessments, and evaluating product performance. The project coincides with a federal Executive Order mandating that government agencies use environmentally preferred cleaners.

Green Chemistry



Green chemistry is the design, manufacture, and use of environmentally benign chemical products and processes that prevent pollution, produce less-hazardous waste, and reduce environmental and human health risks. The DfE Green Chemistry program recognizes and supports fundamental breakthroughs in chemistry that are cost-effective, useful to industry, and prevent pollution. Current projects include:

The Green Chemistry Challenge

—encourages the chemical industry to promote pollution prevention and industrial ecology. Through award and grant programs, DfE recognizes and promotes the research, development, and implementation of new and innovative green chemistry methodologies.

Research Partnerships—sponsor cooperative research projects with industry, government, and academia to develop chemical products and processes that are commercially feasible and more environmentally benign.

SMART Review Program

—assesses the pollution potential associated with new chemicals and their manufacture in order to find environmentally preferable solutions that can be voluntarily adopted by industry.

Green Chemistry Curriculum Development

—incorporates “green chemistry” concepts into the traditional chemistry curricula.

For More Information

Additional information on EPA's Design for the Environment program is available on the Internet at <http://es.inel.gov/dfe>. You may also contact:

Pollution Prevention Information Clearinghouse

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