



Design for the Environment Screen Printing Project



What Is Design for the Environment?

The Design for the Environment (DfE) Program harnesses EPA's expertise and leadership to facilitate information exchange and research on risk reduction and pollution prevention efforts. DfE works with both large and small businesses on a voluntary basis, and its wide-ranging projects include:

- Changing general business practices to incorporate environmental concerns.
- Working with specific industries to evaluate the risks, performance, and costs of alternative chemicals, processes, and technologies.
- Helping individual businesses undertake environmental design efforts through the application of specific tools and methods.

DfE partners include:

- Industry
- Professional Institutions
- Academia
- Environmental and Public Interest Groups
- Other Government Agencies

Designing Solutions for Screen Printers



Why is EPA Working With Screen Printers?

There are about 20,000 graphic art screen printing shops in the United States. These mostly small- and medium-sized businesses perform diverse functions ranging from the printing

of billboard advertisements and posters to printing onto electronic equipment. Screen printing involves stretching a porous mesh material over a frame to form a screen. Then a rubber-type blade (squeegee) is swept across the screen surface, pressing ink through a stencil and onto the print material. In the course of providing their services, screen printers can reclaim the screens using solvents to remove inks, emulsion (stencils), and remnant image elements so the screens can be used again. The use of these solvents, however, can pose potential risks to the people who work with them and to the environment.

The Design for the Environment (DfE) Screen Printing Project is a unique, voluntary effort between the screen printing industry and the U.S. Environmental Protection Agency (EPA) dedicated to helping screen printers prevent pollution and reduce risks to their workers and the environment in cost-effective ways. Printers, EPA, product manufacturers, and the screen printing trade association are all concerned with minimizing the environmental and health risks of screen reclamation chemicals currently used in screen printing shops. DfE's goal in working with screen printers is to help them make more informed choices, now and in the future, by promoting the search for and evaluation of cleaner products, processes, and technologies.

How Did the DfE Printing Projects Get Started?

DfE began working with the printing industry in 1992, when the Printing Industries of America (PIA) requested EPA's assistance in evaluating environmental claims for products. This effort ultimately grew into two separate projects aimed

at preventing pollution in the industry, one focused on the screen printing sector, and the other on the lithography sector. Each project addresses a different area of environmental concern in the printing process. In lithography the focus is on blanket washes, while for screen printing the project partners chose to look at screen reclamation. DfE Screen Printing Project partners include the Screenprinting and Graphic Imaging Association (SGIA), the University of Tennessee, and individual printers and suppliers.

What Has the DfE Screen Printing Project Accomplished?

DfE's work with the screen printing industry is conducted under three distinct project areas: technical studies, implementation, and outreach.

Technical Studies

The DfE Screen Printing Project completed a comparison of the environmental and human health risk, performance, and cost of 14 substitute screen reclamation product systems and technologies. The project collected hazard and environmental release information (i.e., releases to air, water, land) on 72 different chemicals that are found in these screen reclamation systems. With this information, the project assessed the risks to human health and the environment posed by the substitute product systems and technologies.

Performance was evaluated in two phases: 1) the Screen Printing Technical Foundation's laboratory evaluated the products under controlled conditions, and, 2) field demonstrations at volunteer printers' facilities provided performance information under "real world" conditions of production. Twenty-three screen printing shops volunteered to use the substitute product systems for one month. The participating printers recorded the amount of product used, the length of time needed to reclaim the screens, and their opinion of how well the product cleaned the screen.

The information collected in the performance demonstration was used to develop cost data for each of the demonstrated product systems and technologies.

The Screen Printing Project also identified simple workplace practice changes that printers can easily and cheaply implement. In addition, new methods and technologies were examined that might help printers improve their bottom line while reducing human health and environmental impacts.

Information on the comparative risk, performance, and cost of each of the substitute product systems and technologies is contained in the DfE Screen Printing Project's full technical report, the Screen Reclamation Cleaner Technologies Substitutes Assessment (CTSA). The Screen Reclamation CTSA is the first that DfE has completed, and it will be used as a model for future assessments of pollution prevention opportunities in other industries.

Implementation Efforts

In an effort to encourage pollution prevention in the screen printing industry, the DfE Screen Printing Project is providing technical assistance to screen printers. In cooperation with the Small Business Administration, the New Jersey Small Business Development Center, and SGIA, the project has produced a training video entitled *Saving Money and Reducing Waste*. The video provides screen printers with concrete ideas on how to prevent pollution and reduce waste in their shops, as well as promote new ways to improve their processes.

The project has also developed computer software that helps screen printers assess the profitability of pollution prevention investments using total cost assessment techniques. The DfE Screen Printing Project is conducting pilot workshops for screen printers in 1995 on how to use the software.

Both of these products are available at low cost to printers, technical assistance providers, and others interested in pollution prevention in the screen printing industry.

Outreach Activities

The project has created a variety of informational materials based on the Screen Reclamation CTSA. To explain to printers the results of the assessment, the project produced a simple, concise brochure. A series of case studies also has been developed to help screen printers sort through some of the different factors that can make one product system, technology, or work practice a more attractive substitute than another. Other information products geared to small- and medium-sized screen printers are also under development.

Culminating their three-year cooperative effort, DfE and SGIA co-sponsored the first annual screen printing industry conference on the environment. The conference highlighted pollution prevention resources including those developed for the DfE Screen Printing Project.

How Can I Get More Information?

To learn more about the Screen Printing Project or EPA's Design for the Environment Program, or to obtain the documents described in this fact sheet, contact:

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