

A Cooperative Project  
between the  
U.S. Environmental  
Protection Agency  
and the  
Printing Trade  
Associations  
Nationwide

# design FOR THE ENVIRONMENT

August 1996

EPA 744-F-96-008

LITHOGRAPHY PROJECT BULLETIN 2



## BULLETIN HIGHLIGHTS

- Materials Management and Inventory
- Process Improvements
- Waste Management Practices

## ALSO IN THIS BULLETIN

- Improved Workplace Practices
- Management Commitment
- Pollution Prevention Checklist

## Workplace Practices Make the **Difference**

The activities described in this bulletin are the most popular workplace practices that reduced chemical usage among 206 lithographers surveyed. These lithographers, mostly small-and medium-sized facilities, are using these low cost practices to reduce overall chemical usage in their shops. Improved workplace practices have the potential to:

- Reduce harmful chemical exposure to employees and the public
- Reduce operation and materials costs
- Eliminate or minimize sources of pollution
- Improve employees' health and work attendance
- Improve productivity and product quality

The survey was developed and distributed by printers, union representatives, printing industry trade associations, suppliers, and The University of Tennessee Center for Clean Products and Clean Technologies.

Compare their simple ideas with yours and see if you can make your shop even better.





## A Closer Look at Management Commitment

To make pollution prevention an ingrained ethic and strategy with all your employees, it is essential that your shop's definition of work excellence includes environmental awareness.

- ▷ **Make it clear that management will support employees as changes are made and will commit the resources necessary to succeed.**
- ▷ **Encourage employee suggestions through a merit program or some other type of incentive.**
- ▷ **Emphasize hazardous waste reduction efforts to each employee by displaying written procedures on equipment operation and materials handling.**

# It Begins with Materials Management and Inventory

**Identifying the best opportunities for pollution prevention** begins with understanding how chemicals and materials flow through a facility. By examining and documenting this flow through your entire process, you may be able to identify ways to increase the efficiency of your process and reduce waste. Examples of simple, **cost-effective pollution prevention** ideas in materials management and inventory control include:

**Order and manage chemical use on a "first-in, first-out" basis. Do not order more than can be used within the shelf life of the product. Label contents and expiration dates should be legible.**

.....▶ **Why** To reduce materials and disposal costs of expired materials.

**Minimize the amount of chemicals kept on the press room floor at any time.**

.....▶ **Why** To give employees an incentive to use the minimum amount of chemical required to do the job and to prevent spills.

**Centralize responsibility for storing and distributing chemicals.**

.....▶ **Why** To keep track of chemical usage and give employees an incentive to use less materials.



**Eliminate duplication. Don't order many different products to perform the same task, and use multi-task chemicals when possible.**

.....▶ **Why** To eliminate purchasing, tracking, and disposal costs of unnecessary chemicals.

**Use a pump to transfer chemical products from large containers to smaller containers that are used at work stations**

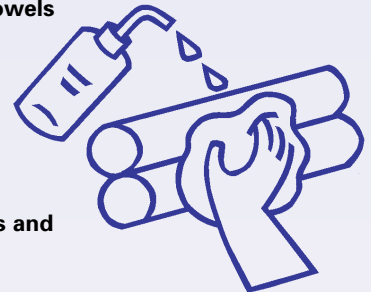
.....▶ **Why** To reduce potential for accidental spills that can occur when chemicals are transferred from container to container by hand and to reduce worker exposure.

# It Continues **Everyday** with **Process Improvements**

Attention to day-to-day practices will uncover many valuable opportunities for pollution prevention and cost savings. You will find that these opportunities exist in nearly every area of your shop. The survey of lithographers focused on blanket washing. Some examples of process improvements identified by the survey include:

## **Use squeeze bottles or plunger cans to apply a specific amount of blanket wash to shop towels**

- Reduces cost and chemical use by applying only what you need to shop towels
- Prevents accidental spills by using a closed container
- Reduces chemical loss and worker exposure by limiting evaporation



## **Use smaller, reusable towels for as long as possible**

- Reduces materials and chemical use by using dirty towels for the first pass and clean ones for the final pass
- Reduces number of towels sent to the industrial laundry by using fewer towels over time
- Reduces chemical use and worker exposure because less blanket wash is needed to dampen the smaller towel

## **Store chemicals and used towels in closed containers**

- Reduces chemical loss and worker exposure by limiting evaporation of chemicals

## **Use alternative, low-volatile organic compound blanket washes or combine an alternative wash with limited use of a standard solvent**

- Reduces chemical usage with no loss of efficiency
- Reduces worker exposure by using a blanket wash with a lower volatile organic compound content and/or lower vapor pressure

## **Apply blanket wash only where necessary**

- Reduces chemical usage by wiping ink off before cleaning equipment with solvents and using blanket wash only when necessary
- Reduces worker exposure by using chemicals less frequently

## **Use personal protective equipment (gloves, aprons, and barrier creams)**

- Reduces worker exposure by protecting from direct contact with chemicals

## **Try increasing water dilution ratios**

- Reduces cost per wash by using less blanket wash



## Here's Your Checklist for Pollution Prevention in Your Workplace

### MATERIALS MANAGEMENT AND INVENTORY

- Manage inventory on a "first-in first-out" basis
- Minimize the amount of chemicals on the press floor at any time
- Centralize responsibility for storing and distributing chemicals
- Store chemicals in closed, clearly marked containers
- Use a pump to transfer chemical products from large to small containers

### PROCESS IMPROVEMENTS

- Use squeeze bottles or plunger cans to apply a specified amount of blanket wash to shop towels
- Use smaller, reusable towels for as long as possible
- Store chemicals and used towels in closed containers
- Evaluate chemical alternatives
- Apply blanket wash only where necessary
- Use personal protective equipment
- Try increasing water dilution ratios

### WASTE MANAGEMENT

- Track chemical and material stock, use, and waste generation rates
- Segregate waste by waste stream
- Store waste and used towels in closed containers

Partners in the Design for the Environment Lithography Project: Printing Industries of America, Graphic Arts Technical Foundation, the Environmental Conservation Board of the Graphic Communications Industry, The University of Tennessee, and individual printers and suppliers.

# Don't Let Your Efforts Go To Waste. **Improve** Your Waste Management Practices

Now that you have begun reducing the waste generated in your shop, additional opportunities exist for improving the **management of waste** products generated during normal printing operations.

➤ **Track** **chemical and material stock**  
**chemical and materials use**  
**waste generation rates**  
| Provides insights into pollution prevention and cost saving opportunities

➤ **Segregate** **waste by waste stream**  
| Allows for easier reuse and recycling of waste materials

➤ **Store** **waste and used shop towels in marked, easily accessible**  
**closed containers**  
| Prevents nonhazardous waste from becoming contaminated with hazardous waste  
| Minimizes evaporation of chemical waste products  
| Reduces worker exposure

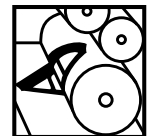


## About the Design for the Environment Lithography Project

The goal of the Design for the Environment (DfE) Lithography Project is to provide lithographers with information that can help them design an operation which is more environmentally sound, safer for workers, and more cost effective.

Concentrating on the process of blanket washes, the partners of the DfE Lithography Project, in a voluntary cooperative effort, evaluated 37 different blanket wash products. Information was gathered on the performance, cost, and health and environmental risk trade-offs of the different types of substitute blanket wash. For more details on the evaluations, please refer to the "Evaluating Blanket Washes: A Guide For Printers."

In addition to the Lithography Project, similar DfE projects are currently underway with both the screen printing and flexography industries.



To obtain additional copies of this or other bulletins and case studies, or for more information about EPA's Design for the Environment Program contact:

EPA's Pollution Prevention Information Clearinghouse (PPIC)

U.S. EPA

401 M Street, SW (7409)

Washington, DC 20460

Phone: (202) 260-1023

Fax: (202) 260-4659

E-mail: [ppic@epamail.epa.gov](mailto:ppic@epamail.epa.gov)

DfE Web page: <http://www.epa.gov/dfe>