



# Pollution Prevention Handbook

## Painting and Building Maintenance

No. 11 in Series of Fact Sheets.



Department of the Interior

Office of Environmental Affairs (OEA)

Although you may not realize it, many of the activities that take place at your facility may pollute the environment and waste money. A facility such as yours can become more environmentally friendly and cost efficient by reducing the amount of waste generated. Everyone is interested in doing his/her part to protect the environment, and simple steps such as recycling paper products and used oil properly can help. Growing numbers of facilities are becoming aware of the environmental harm their operations may cause and are making a commitment to reduce waste through a series of steps commonly known as pollution prevention.

Pollution prevention is the use of materials, processes, or practices that reduce or eliminate the quantity and/or toxicity of wastes at the source of generation. Pollution prevention is a multimedia approach that minimizes or eliminates waste released to land, air, and/or water without simply shifting pollutants from one media to another. The Department of the Interior (DOI) considers source reduction to be the most preferred environmental management technique for dealing with a waste generation problem. In addition, pollution prevention is often the most cost-effective means to reduce environmental and health risks associated with waste. Pollution prevention is often cost effective because it may reduce raw material losses; reduce reliance on expensive "end-of-pipe" treatment technologies and disposal practices; conserve energy, water, and raw materials; and reduce the potential liability associated with waste generation. The Pollution Prevention Act of 1990 makes pollution prevention a national policy for environmental management.

For wastes that cannot be reduced at the source, DOI recommends that generators consider recycling as the next best option. Wastes that cannot be reduced at the source or recycled should be stored, treated, and/or disposed in accordance with all ap-

plicable waste management regulations. Wastes should be disposed safely to minimize adverse impacts on the environment.

### BENEFITS OF POLLUTION PREVENTION & RECYCLING

Establishing a pollution prevention/recycling program at your facility has many potential benefits for you, your facility, and the environment. Some of these benefits are direct (e.g., cost savings from reduced raw material use), while others are indirect (e.g., avoided waste disposal fees).

### PURPOSE OF THIS FACT SHEET

This fact sheet introduces source reduction and recycling options that can start you on the road to eliminating, reducing, or recycling wastes. This fact sheet describes many pollution prevention options that you, as the manager of your facility, may adopt to reduce wastes. The last page of this fact sheet is a list of specific practices and techniques that employees at your facility can take to help implement your pollution prevention/recycling program. The list of pollution prevention tips can be posted in your work area to encourage employees to use environmentally-safe practices.

### DEVELOPING A POLLUTION PREVENTION/RECYCLING PROGRAM

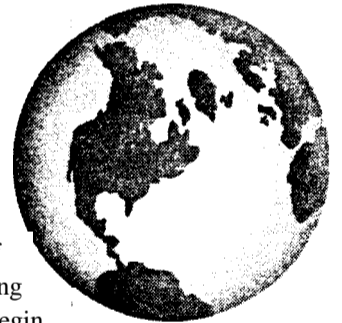
#### Recognizing the Need for a Pollution Prevention/Recycling Program

The first step is to recognize the need for waste reduction at your facility and secure staff commitment to achieve source reduction and recycling goals. Once you have convinced your staff of the benefits of a pollution prevention/recycling program, use the steps outlined below to help begin designing your program. Each step can be as basic

### DEFINITIONS:

*Source Reduction:*  
Reducing or eliminating the quantity and/or toxicity of a waste before it is generated (i.e., at the source).

*Recycling:*  
Recovering a waste from one process and reusing it in the same process or in another process in an environmentally safe manner.



or complex as you feel is necessary to meet the environmental goals that you set for your facility.

### Planning and Organizing

The next step is to plan and organize your pollution prevention program. This involves establishing program goals and objectives, as well as staffing a task force to conduct a pollution prevention "assessment" of the facility.

### Conducting a Pollution Prevention Assessment

The goal of a pollution prevention assessment is to identify opportunities at your facility where you can reduce waste generation, emissions, and environmental damage. The assessment can involve collecting process-specific information, setting pollution prevention targets, and developing, screening, and selecting pollution prevention options for further study. Pollution prevention assessments can be extensive process examinations using scientific methodology, or they can be less formal evaluations of waste generation and management practices.

### Evaluating Pollution Prevention Options

Once pollution prevention options are identified, evaluate the technical and economic feasibility of each option. These evaluations can help determine which pollution prevention options are most suitable for implementation at your facility. Pollution prevention options range from simple and easy-to-implement techniques to detailed engineering or design changes. The options you choose will depend on your facility's operations, needs, and environmental goals.

### Types of Pollution Prevention Techniques and Options

**Production Planning and Sequencing** - Plan and sequence production to maximize raw materials.

**Process or Equipment Modification** - Change the process, parameters or equipment used in that process to reduce the amount of waste generated.

**Raw Material Substitution or Elimination** - Replace existing raw materials with other materials that produce less, or a non-toxic waste.

**Loss Prevention and Housekeeping** - Perform preventive maintenance and manage equipment and materials to minimize opportunities for leaks, spills, evaporative losses and other releases of potentially toxic chemicals.

### Implementing Your Pollution Prevention Program

The final steps in the process are implementation of the pollution prevention program and evaluation of its success. After the program is implemented, an evaluation can increase the overall success of the pollution prevention program by identifying deficiencies that remain. Specifically, the evaluation may identify new assessment targets and additional pollution prevention program options for investigation.



**If you are interested in obtaining additional reference information** about developing and implementing a pollution prevention program at your facility, contact EPA's Pollution Prevention Information Clearinghouse (PPIC) at (703) 821-4800. PPIC is a free service that provides the public with technical, programmatic, and policy references about source reduction and recycling.

We recommend the following documents that discuss pollution prevention program options and waste assessments in greater detail. They are available from PPIC free of charge:

*Waste Minimization Opportunities Assessment Manual*, U.S. EPA, Hazardous Waste Engineering Laboratory (EPA/625/7-88/003). July 1988. Request PPIC document # WAM-3.

*Profiting From Waste Reduction in Your Small Business*, Alaska Health Project, 1988. Request PPIC document # WAM-2.

**Waste Segregation and Separation** - Avoid mixing different types of wastes. This makes the recovery of wastes easier by minimizing the number of different constituents in any given waste stream.

**Closed-Loop Recycling** - Use or reuse of a waste as an ingredient or feedstock in the production process on site. Recycling in which a waste is recovered and reused in the same production process on site as an input is a form of pollution prevention.

**Training and Supervision** - Provide employees with the information and the incentive to minimize waste generation in their daily duties. Train employees to practice proper and efficient use of tools and supplies, and to understand and support the company's pollution prevention goals.



### Potential Benefits of Pollution Prevention

#### To the individual:

- *Eliminating or reducing toxic or hazardous chemicals in the workplace provides a safe, healthy work environment for all employees.*

#### Waste reduction can:

- *Help your facility to achieve regulatory compliance.*
- *Reduce operating costs by limiting the amount of raw materials, energy, and water used at your facility.*
- *Minimize waste transportation, storage, and disposal fees.*
- *Reduce liability associated with waste handling, storage, and transportation.*
- *Demonstrate DOI's concern about the environment.*

#### To the Environment:

- *reducing pollution improves the quality of the environment for everyone.*



# Pollution Prevention/Recycling Checklist

## Painting and Building Maintenance



*This checklist is designed to encourage thought on ways to reduce waste in your shop. By answering the following questions, you may identify some easy-to-implement pollution prevention and recycling options as well as more comprehensive approaches to reducing wastes.*

### GENERAL PRACTICES

**Q Is your facility in compliance with environmental regulations?**

Pollution prevention can help keep your facility in compliance with environmental regulations by reducing hazardous waste generation, storage, treatment, and disposal at your facility. If you are uncertain of whether your facility generates hazardous waste, contact your state's hazardous waste management agency.

**Q Have you conducted a pollution prevention assessment?**

A pollution prevention assessment is a procedure to help identify waste sources, and identify, evaluate, and implement options to reduce or eliminate wastes. EPA has developed a rigorous waste assessment methodology for waste generators. This process is described in the *Waste Minimization Opportunity Assessment Manual*, available from EPA's PPIC. Once a pollution prevention assessment is complete, it should be reviewed periodically to determine if operations or opportunities have changed.

**Q Are employees trained in the proper use, recycling, and/or disposal of hazardous materials?**

Properly trained employees can help to ensure that the right chemical is used for the right job, and that chemicals are safely and properly handled and disposed.

**Q Do you have inventory procedures for raw materials?**

Strict inventory control is the most effective and cost-efficient way to prevent usable materials from needlessly becoming wastes. Improperly stored, labeled, or outdated material can become hazardous waste. Routinely check the date of materials to prevent them from outlasting their shelf life. Practice "first-in, first-out" inventory control - use older supplies before new materials.

**Q Is access to hazardous material supplies limited?**

When possible, assign control over hazardous material supplies to limited numbers of people who are trained to handle hazardous materials, and who understand the "first-in, first-out" inventory policy. Give one person the responsibility of maintaining the storage area. Limiting access to supplies prompts employees to conserve raw materials.

**Q Is the hazardous material storage area routinely checked for leaks?**

The cheapest way to reduce pollution is to prevent it from reaching the environment in the first place. Conduct routine inspections and identify and repair leaking containers to stop unnecessary waste generation and spills.

**Q Are empty hazardous material containers and expired hazardous materials returned to the supplier?**

Empty containers may contain residues that must be treated as hazardous wastes. Return empty containers to the supplier for proper reuse or recycling. Rather than disposing of expired material, return it to the supplier for recycling. Some suppliers provide credit toward your next purchase.

**Q Are shop wastes segregated?**

Mixing wastes may increase treatment cost and often makes recycling more difficult. In particular, keep hazardous and non-hazardous wastes separate. Do not mix used oil and solvents. Keep chlorinated solvents (such as 1,1,1-trichloroethane and methylene chloride) separate from non-chlorinated solvents.

### GOODHOUSEKEEPING

**Q Are lids kept closed and bungholes tightly plugged on drums or containers of paint, and paint thinner?**

Keeping lids closed and bungholes tightly plugged prevent the evaporation of solvents, reduce spill incidents, limit contamination from dirt and moisture, and minimize health hazards and air pollution. Trash can lids should also be kept tightly closed.

**OEA would like to thank the following for their documents that were used to develop this fact sheet:**

*Minnesota Office of Waste Management - "Examples of Waste Reduction for County Government"*

**Q Is equipment routinely checked for leaks?**

Small leaks can cause big problems. Routinely inspect all equipment for leaks and perform regular equipment maintenance.

**Q Are spills of materials common?**

Spills may be common, but preventable. sources of pollution. Avoid the potential for spills by keeping a clean and orderly shop. Reduce the likelihood of spills by using a gravity spigot or pump to dispense bulk liquid. Always use a spout and funnel when transferring liquid from a large container to a smaller one. When possible, scrape up spilled material rather than using absorbent material, water, or solvents. Avoid washing material spills down floor drains. Depending on the substance spilled, this can harm the environment and may be illegal. Train personnel in spill management and have proper spill containment equipment available on site.

**R E C Y C L I N G**



**Q Do you recycle any of your shop wastes?**

Spent solvents, paints, and paint thinners can be recycled either on-site or off-site. Some ways that you can reuse and recycle these wastes include:

- **Least Effort:** Contractors in your area may recycle solvents wastes. Contract with a commercial recycling contractor to pick up spent solvents on a regular basis and replace them with clean solvents. A recycling facility can typically regenerate 70-80% of spent solvents and can sell the regenerated solvents to you at a lower price than new solvents.

When possible, reduce the numbers of different organic solvents used. This makes recycling easier and reduces hazardous waste management. Often, one solvent can perform a job as well as two different solvents.

- **Moderate Effort:** Spent solvent, paint, and paint thinner may be recycled on site using a filtration system to remove particular contaminants.
- **Most Effort:** If your facility generates large volumes of spent solvents, you may consider purchasing or leasing a still to recover spent solvents for reuse on site. Contact your state's hazardous waste management agency for additional information concerning on-site recycling of spent solvents.

**Q Have you considered arranging agreements with other buildings or facilities to jointly recycle solvents?**

Developing cooperative recycling agreements with other buildings makes recycling economically viable for all participants.

**Q Does your facility have an office waste recycling program?**

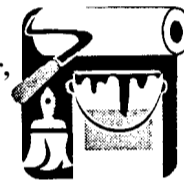
A good way to reduce the amount of waste in your building is to establish an office recycling program. Office paper, glass, aluminum, and steel cans are easily recyclable resources. In addition, reusing bags, containers, paper, boxes, and other items helps to reduce the amount of generated waste. For additional information about Office recycling programs, consult Pollution Prevention Fact Sheet No. 9 of this series. "Office Waste Reduction."

**Q Do you recycle shipping/packaging material?**

Another way to reduce waste from your building is to recycle shipping material such as cardboard boxes and wood pallets. Contact retailers to determine if they have buy-back programs. If not, try to set up a program in which the retailer buys back the material and gives credit on future purchases.

**PAINTING OPERATIONS**

**Q Does your facility generate waste paint or paint thinner, rags soiled with paint, or spent halogenated and non-halogenated solvents?**



Many of these spent materials are considered to be hazardous wastes. Answering the following questions can help to reduce the amount of these wastes your facility generates.

**Q Is paint use kept to a minimum?**

Limiting the amount of paint used per job reduces excess paint disposal. It also reduces the amount of solvent needed for equipment cleanup. Try to implement some of the following paint reduction measures:

- Mix only as much paint as needed for a job. Train employees to carefully estimate paint amounts and to mix paints correctly.
- Use a smaller than standard (one quart) size paint cup on spray guns for small touch-up jobs. This limits the amount of excess paint.
- Save off-color paint for possible other jobs.
- Apply extra coats to use up excess paint.
- Avoid repainting by first inspecting the area to be painted to ensure it is dry, clean, and rust-free.



**From the White House (October 31,1991):**

*Federal agencies and facilities must initiate programs to promote cost-effective waste reduction and recycling of reusable materials.*

*Agencies that generate energy from fossil fuel systems must, whenever possible, begin to use energy or fuels derived from solid waste as their primary or secondary energy source.*

*Agencies are required to adopt "environmentally-affirmative" procurement programs that will enhance Federal procurement of products made from recycled and recyclable materials.*

*In addition to required standards, agencies are encouraged to participate in the development of voluntary, environmentally sound, and economically efficient waste reduction, recycling, and procurement standards.*

- Painting should be done when needed and not based on an arbitrary, preset schedule.

**Q Have you considered using equipment that generates less waste?**

As little as 30% of the paint reaches the target from airless spray guns. Remember that higher transfer efficiency equals less paint required for a job. Alternatives with higher transfer efficiency are listed below:

- Airless and air assisted airless
- Electrostatic spray systems
- Flat line finishing
- High-volume low-pressure (HVLP)
- Vacuum systems
- Heaters in conjunction with compressed air or airless systems.

**Q Have you investigated substituting water-based paints for solvent-based paints?**

Industries can reduce solvent waste by switching to water-based paints with low or no mercury content. Water-based paints are formulated with considerably less solvents, can be cleaned with water, and do not require the use of special safety equipment (such as respirators). Switching to water-based paints generally requires no new equipment.

**Q Do you conduct a painting assessment before beginning a job?**

Before painting, do an assessment to determine if the entire surface requires painting or if a touch-up job is all that is required. Spot-painting reduces the amount of paint, paint thinner, and cleaning solvent necessary to complete the job. Try to avoid painting according to a yearly schedule. Instead, do a yearly assessment and paint only when it is necessary-

**BUILDINGMAINTENANCE**

**Q Do you purchase environmentally sound products?**

Purchasing environmentally sound products will reduce waste and help the environment at the same time. Try to incorporate some of the following environmentally sound practices:

- Buy reusable products and avoid disposable goods
- Buy, maintain, and repair durable products
- Buy concentrates, larger-size containers or products in bulk
- Buy products that can be recycled and make sure to recycle them



- Buy products made of recycled materials
- Buy, sell, and donate used and secondary goods such as furniture and appliances
- Purchase **only** the necessary amount of goods
- Use the product's material safety data sheets, available from the manufacturer, to obtain valuable information on the toxic and hazardous nature of the product.

**Q Have you considered using non-hazardous cleaning solvents?**

Try to avoid buying products that contain toxic materials. Purchase cleaning items that are non-toxic and environmentally sound. Try using plain soap and water for certain spills.

When the use of hazardous substances is necessary, purchase only the amount necessary for the job at hand. Dispose of product containers properly, according to your state or community's policy on household hazardous waste disposal. Keep paint/solvent contaminated rags in closed containers before washing.

**Q Have you considered non-toxic or less-toxic methods of pest control?**

Investigate non-toxic pest control methods, such as live trapping, as an alternative to toxic poisons. If you must use a toxic pest control material, choose a material that is effective, yet less toxic and persistent in the environment after use.

**C O N S E R V A T I O N**

**Q Have you conducted an energy audit in your building?**

Conduct an energy audit in your building to determine ways to conserve energy and cut energy costs. Incorporate the following methods to reduce energy use:

- Install energy efficient light bulbs
- Install motion-sensitive outside lights
- Turn off lights at the end of the evening
- Turn off machines not in use
- Ensure that your water heater is well insulated.

**Q Are water use and leaks kept to a minimum?**

Checking water faucets and other outlets on a regular basis can help reduce the amount of water used in your building. Try the following means to reduce water consumption:

- Repair or replace leaky water faucets
- Turn off water faucets and hoses not in use
- Install low volume toilets.



**Make It Work!**

*Motivating employees to reduce waste generation is the key to a successful pollution prevention/recycling program. Training and educational programs can inform employees about pollution prevention concepts. The last page of this fact sheet contains easy-to-follow pollution prevention techniques that may be implemented today. It is designed to be removed from this booklet and posted where employees can see it. By discussing pollution prevention with your employees, you may be happily surprised with their suggestions and enthusiasm for reducing hazardous wastes.*





# STOP POLLUTION!

*Pollution Prevention Tips for Painting and Building Maintenance*



- **Keep storage rooms clean and orderly** to eliminate spills and leaks.
- **Use a “first-in, first-out” inventory policy** for raw materials to prevent them from exceeding their shelf life prior to use.
- **Stop Spills!** Don't pour materials directly from drums to smaller containers. Use spigots, pumps, and funnels when pouring materials from one container to another.
- **Use different labeled funnels** for solvents to reduce cross-contamination.
- **Collect and recycle** used solvents and fluids. Don't pour these materials down the drain!
- **Conduct painting assessments** prior to beginning a job to cut down on the amount of paint, paint thinner, and cleaning solvents used. Paint only when necessary.
- **Turn off lights** and machines at the end of the day.
- **Regularly check for water leaks** and turn off water taps not in use.
- **Participate in a recycling program** by collecting and recycling such items as office paper, aluminum cans, glass, and steel cans.
- **Talk to your manager** about new ideas for pollution prevention and waste reduction.



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