



## Waste Reduction Opportunities for Printers

Wastes and emissions from your printing facility can cause environmental compliance headaches and unnecessary drain on your operation's profits. Eliminating the sources of hazardous waste and hazardous air and wastewater contamination can often reduce costs and simplify environmental compliance. Prevention of waste, rather than after-the-fact treatment of wastes, attacks the problem at the source.

This fact sheet serves as a checklist to help you review potential sources of hazardous waste, solid waste, air emissions, and wastewater contaminants in your printing operations. Strategies for reducing these wastes at the source are also reviewed.

### Potential Sources of Printers' Waste

The following wastes may be classified as hazardous depending on the actual composition (see WI-DNR Small Quantity Generator's Guide for information on how to determine whether a waste must be categorized and handled as hazardous). When reviewing material safety data sheets (MSDS) to identify potential sources of hazardous wastes, remember to also consider potential contaminants, such as inks, metals and other chemicals, that a solution can pick up during production processes.

### Hazardous Waste

#### *Photographic Wastes*

photo developer, photo fixer, intensifiers, reducers, systems cleaner, scrap litho film

#### *Spent Solvents*

carbon tetrachloride, ethanol, isopropanol, ethyl benzene, 1,1,1-trichloroethane, methylene chloride, trichloroethylene.

#### *Waste Inks with Solvents or Heavy Metals*

inks and empty containers.

#### *Cleaning Rags*

if contaminated with solvents or residues that are classified as hazardous waste.

#### *Strong Acid or Alkaline Wastes*

ammonium hydroxide, hydrochloric acid, nitric acid, phosphoric acid, sodium hydroxide, sulfuric acid, chromic acid.

#### *Spent Plating Wastes*

spent etch baths, spent plating solutions and sludges, and cleaning baths.

#### *Ink Sludge Containing Heavy Metals*

ink sludges with chromium, lead or cadmium.

### Types of Printing Waste

#### – Hazardous Wastes

- photographic wastes
- spent solvents
- waste inks
- solvent-laden cleaning rags
- strong acid/alkaline wastes
- spent plating waste
- ink sludge
- used containers with hazardous residues

#### – VOC's

- inks
- fountain solutions
- adhesives
- cleanup solutions

#### – Toxic Waste Emissions

- rinse from photodeveloping process
- any hazardous waste released down drain

#### – Non-Hazardous Solid Waste

- waste substrate
- non-hazardous waste inks
- rags and wipes without solvents or residues
- empty cartons, wrappers, and roll cores

*Used containers*

containing hazardous residues of solvents, inks or adhesives.

*Miscellaneous*

refrigeration tank filters  
used oil from vehicles or compressors

**Volatile Organic Compound (VOC) Air Emissions**

*Inks*

xylenes, ketones, alcohols, aliphatics

*Fountain Solutions*

isopropyl alcohol, VOC substitutes for IPA.

*Adhesives*

binding, labels

*Cleanup*

toluene, naphtha, kerosene, methanol, chlorinated solvents

**Toxic Waste Emissions**

*Photo Developing*

rinse from photo developing processes

*Liquid Hazardous Waste*

when released down drain

**Non-Hazardous Solid Wastes**

*Waste Substrate*

paper, plastic, foil, textiles and metals from trimmings, rejects, and excess quantities.

*Non-Hazardous Waste Inks*

inks and empty containers

*Rags and Wipes*

without solvents or hazardous residues.

*Empty Packaging*

including cartons, wrappers and roll cores.

**Waste and Emission Reduction Opportunities for Printers**

**Good Housekeeping**

Cover all solvents.

Limit solvent use by using pumps or squeeze bottles, rather than pails, to wet cleanup cloths.

**Key Process Improvements for Source Reduction**

*Improve accountability for waste generation and incentives for reduction*

*Improve control over inventory and the printing processes*

*Substitute less hazardous materials*

*Reduce and reuse solvents*

*Extend lives of plating and developing baths*

*Recycle inks, developers, and films*

**Waste Reduction Opportunities**

*Good Housekeeping*

*Waste Accounting*

*Inventory*

*Photochemicals*

*Platemaking*

*Alternative Materials*

*Printing*

*Cleanup*

*Waste Ink*

*Finishing*

Keep hazardous wastes segregated from non-hazardous and each other.  
Do not allow personal stockpiles of hazardous materials (e.g., cleanup solvents).

### Waste Accounting

Collect accurate data on wastes and emissions to identify key reduction opportunities.  
Establish accountability for waste generation and provide incentives for reduction.  
Provide feedback on waste reduction performance to employees.  
Order and manage to minimize date expiration of materials.  
Centralize responsibility for storing and distributing solvents.  
Use returnable containers.  
Use returnable plastic or wood pallets.  
Require that all potentially hazardous samples be pre-approved and vendor must accept unused portion.

### Photochemicals

Extend lives of photo and film developing baths by adding replenishers and regenerators.  
Reclaim and recycle silver from wastewater.  
Use countercurrent rinsing.  
Keep sensitive process baths covered.  
Increase use of electronic imaging.  
Recycle photographic film and paper.

### Platemaking

Use countercurrent rinsing.  
Reduce drag-in of contaminants. Reduce drag-out of solution by adding dripboards and extending drip time.  
Use non-hazardous developers and finishers.  
Increase use of direct-to-plate technologies that allow preparation of plates from computer images without intermediate steps.

### Alternative Materials

Use inks that reduce VOC emissions: e.g., vegetable-based; water-based; ultraviolet; and electron beam drying.  
For jobs still using inks with heavy metals, find alternatives.  
Eliminate or reduce alcohol in fountain solution.  
Consider using waterless offset printing.  
Use non-hazardous, low- or no-VOC solution to clean equipment.

### Printing Process

Use standard sequence on process colors to minimize color changes for presses.  
Improve quality control to reduce rejects.  
Improve accuracy of counting methods, reducing excess quantities printed to accommodate inaccuracy.  
Use web break detector and automatic splicer.  
Properly store ink to prevent skin from forming.  
Use refrigerative cooling to reduce evaporative losses of fountain solution.  
Run similar jobs simultaneously to reduce cleanup.

Reuse waste paper or collect for recycling.  
Use scrap paper for press setup runs.

### Cleanup

Use automatic blanket washes.  
Wring or centrifuge used cloths to recover solvent and reuse solvent in parts washer or for additional press cleaning.  
Avoid soaking cloths in solvent; use plunger or squeeze bottle to dampen cloth.  
Use parts washing equipment to wash press trays.  
Use cleanup solution with lower VOC content and lower vapor pressure.  
Clean ink fountains only when changing color; use spray skin overnight.  
Provide marked, accessible containers for segregated collection of used solvents.

### Educate Customers

Customer choices and specifications affect environmental impacts of a printing process. It is important that customers receive the right information and pricing signals to encourage purchasing decisions that reduce environmental impacts.

### Waste Inks

Consider reusing as house colors.  
Carefully label and store special-order colors for future reuse.  
Mix to make black ink for internal or external use.  
Recycle after processing.  
Donate for reuse by printing schools or others.

### Finishing

Use water-based adhesives.  
Minimize coatings that hinder recycling.

g For more information, contact your County Extension Agent or SHWEC g

#### County Extension Information

#### SHWEC Offices

##### Green Bay

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