

Table \_\_\_\_

Pollution Prevention Opportunities for Printing

The keys to pollution prevention in printing are material substitution (nonmetal inks), minimization of changeover, and ink recycling.

<u>Y/N</u>	<u>Opportunities</u>	<u>Comments</u>
	<b>I. Good Operating Practice</b>	
_____	Segregate waste streams	Spent fix baths should be segregated from rinsewaters and developer solutions because silver recovery is more efficient on more the more concentrated spent fix waste stream.
_____	Control inventory	Do not allow material to exceed shelf life and then have to be discarded as waste. Use materials on a first-in, first-out basis. Do not get rid of expired products by discharging to wastewater treatment system.
_____	Adjust replenishment	Adjust chemical replenishment rates and washwater flow rates on photoprocessor to optimize bath life and reduce wastewater quantity.
_____	Keep lids on solutions	In storage, keep lids on bulk solutions to prevent oxidation and contamination of these solutions.
_____	Minimize spills	Use dry method cleanups.
_____	Return used ink to vendor	Purchase ink from distributors that will take back unused or spent ink, so ink will not be discharged to the sewer.

Y/N                      Opportunities                      Comments

**I. Good Operating Practice (continued)**

- \_\_\_\_\_ Run similar jobs at once                      Minimizes need for cleaning between jobs.
- \_\_\_\_\_ Use non-dry aerosol                      Special non-drying aerosol materials can be sprayed on ink fountains to keep them from drying out overnight. Fewer ink fountain cleanings required.

**II. Material Substitution**

- \_\_\_\_\_ Change to silver-less film                      Silver does not end up in rinsewaters or spent fix baths when this type of film is used. Examples include vesicular, diazo, and electrostatic films.
- \_\_\_\_\_ Change to ultraviolet inks                      Will not dry in ink fountain overnight. Reduces need for fountain cleaning.

**II. Process Modification**

- \_\_\_\_\_ Add ammonium thiosulfate                      Addition of this chemical to silver contaminated bath extends the useful life of the bath
- \_\_\_\_\_ Purchase new machines--1                      Purchase new developing machines that use less rinsewater (e.g., countercurrent rinsing) and/or have squeegees or air blades to reduce dragout from chemical baths to rinsewaters.
- \_\_\_\_\_ Purchase new machines--2                      Purchase waterless paper and film developing machines to reduce the volume of fix waste.

Y/N                      Opportunities                      Comments

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II. Process Modification (continued)

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|----------------------------------|--|
| _____ Add acetic acid            | Acetic acid added to the fix bath keeps the pH low to maximize soluble complexes, therefore, extend bath life. |
| _____ Install electronic imaging | Eliminates need for photoprocessing.<br>Expensive.   |
| _____ Install laser platemaking  | Eliminates need for photoprocessing.<br>Expensive.   |
| _____ Use flexographic process   | Replaces metal etch processes for plate processing.  |

IV. Material Recovery

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|------------------------------------|--|
| _____ Recover fix bath silver      | Install electrowin unit on fix bath of photoprocessor. Extends bath life.  |
| _____ Install electrowin           | Install electrowin unit on first rinse and developer waste streams to recover silver from solution and reduce toxicity of wastewater.        |
| _____ Metal replacement cannister  | Install cannister on rinsewaters and on effluent of wastewater electrowin to recover silver from solution and reduce toxicity of wastewater. |
| _____ Install rinsewater recycling | Reduces wastewater.  |
| _____ Recycle inks                 | Recycle inks to make black ink instead of discharging to sewer.  |