

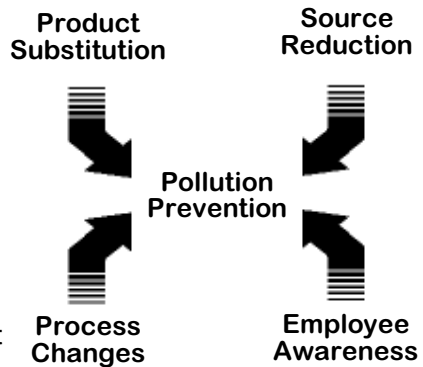
2 POLLUTION PREVENTION

FIRST STEP TO COMPLIANCE

Let's take this opportunity to look specifically at P2 techniques that are applicable to your shop area – prepress, pressroom and postpress. Review the techniques appropriate to your operation and use them to determine how well your existing environmental management practices compare to the other practices in common use in other print shops like yours.

Each category begins with a list of techniques that are low cost, common sense, best management practices that printers have implemented. P2 techniques are then identified in each category that require increasing amounts of capital or employee training to implement. These techniques, while more challenging to implement, have been used by printers to lower costs of compliance and increase their competitive advantage. They may be cost-effective strategies for you to consider, if you have not already. To determine which level of P2 investment is right for you, see pages 68-69 for simple methods to help you calculate the costs and benefits of P2 techniques, including those not-so-obvious costs that impact the workplace and environment and are often hidden in your shop's overhead.

This list is not all inclusive. It is provided to introduce many P2 techniques that have been successfully used by both small and large printers.



Prepress Operations (tray processing)



1. Store temperature and light sensitive chemicals according to manufacturer's directions.
2. Avoid overstock of time-sensitive materials.
3. Recycle photographic film.
4. Look for nonhazardous intensifiers and reducers that do not contain mercury and cyanide salts.
5. For tray processing, use countercurrent washes. Reuse used rinse-water for the initial film wash and fresh water in the last rinse bath. When the last rinse bath needs changing, use it for the initial bath.
6. Use formaldehyde-free photochemistry.
7. Use floating lids on the photochemical hand trays to reduce air exposure and maximize solution life.

Prepress Operations (film, plate, screen)

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8. Change processor baths when no longer effective rather than on a fixed schedule. Test with a gray scale.
9. Extend bath life by adding replenishers. (Check silver carryover to the washwater, recirculation of fixer with silver recovery can prevent it.)
10. Limit your exposure to aerosol products. If possible, use only nonhazardous aerosols, pumps or refillable bottles.
11. Set processors according to manufacturer specifications to minimize fresh water use, or install electronic valves for better water management and solution recirculation.
12. Use waterbased plate developers or systems with recyclable chemistry.
13. Calibrate photoprocessor for proper chemical consumption. Periodically check/replace rubber rollers.
14. Install recirculation units for fixer, developer and rinsewater. In-line silver recovery with fixer recirculation system can prolong fixer usage.
15. Install metallic replacement cartridges after electrochemical Silver Recovery Units (SRUs) to collect more silver. Two-stage SRUs can remove up to 99% of the total silver if properly maintained. Use ion exchange columns as a third stage (or for rinsewater), if you have low silver discharge limits.
16. Use waterbased platen and screen adhesives to reduce emissions.
17. Use laser printed, waterbased direct-to-plate or digital prepress systems to eliminate the use of film and plate processing.

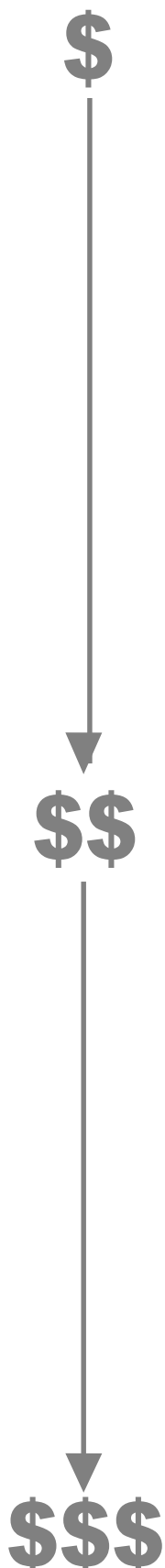


Press Operations (general and lithographic)

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18. Order only the amount of ink you need to do the job.
19. Reuse dirty solvent for the first noncritical cleaning step followed by uncontaminated solvent.
20. Reuse lightly soiled shop towels for noncritical cleaning.
21. Use alcohol-substitutes in the fountain solution.
22. Keep solvents in closed containers and parts washers.
23. Hand wring or gravity drain soiled shops towels to recover as much solvent as possible for recycling. (See page 23 for more guidance.)



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24. Use spray or plunger cans for cleaning solvents
 25. Use spot application of solvents for stubborn ink residues rather than general over application of solvent.
 26. Use spray preservatives conservatively to prevent ink from drying in fountains overnight. *(This technique may result in higher start-up wastes and should be compared to new non-skimming inks.)*
 27. Keep ink containers covered to prevent skin over. Investigate new-non-skimming ink systems.
 28. Scrape as much ink out of containers as possible. Scrape leftover ink from fountains for reuse or blending into black ink.
 29. Use transfer pumps for solvent drums to minimize spillage.
 30. Use petroleum-based cleaning solvents that can be diluted with water before application. Conduct trials to find the best mix.
 31. Obtain state and federal reports, available at agency websites and www.pneac.org, on blanket wash effectiveness and factsheets.
 32. Cover ink fountains on web presses.
 33. Use alternative inks, such as vegetable-based inks.
 34. Evaluate and use waterbased cleaning solutions.
 35. Use solvent sinks for cleaning parts to reduce once-used solvent cleaning of press parts.
 36. Take leftover inks and mix them for reuse by using software programs.
 37. Install an explosion-proof centrifuge or dry cleaning units for wringing shop towels dry. *(Cost effective for midsize and large users of towels.)*
 38. Recycle press cleaning solvent using a fully-enclosed solvent recovery system. *(May require a permit to operate.)*
 39. Install ink recycling systems or use vendor mobile systems.
 40. Retrofit presses with automatic blanket washers or purchase new presses with these cleaning systems.
 41. Install a centrifuge or fully-enclosed cleaning system to remove excess free liquid from shop towels. *(This option may require a DEP permit.)*
 42. Use UV-cured inks, electron-beam (ECB) inks or waterbased inks when possible.

Press Operations (gravure/flexographic/screen)



43. Use ink thinners with less toxic ingredients.
44. Use more effective, safer emulsion and haze remover products and avoid using degreasers.
45. Reclaim screens immediately after a print run using alternative screen reclamation chemicals.
46. Reclaim waste ink onsite or work out inks using computer software.
47. Enclose or cover ink fountains.
48. Use enclosed or angled doctor blades on rollers.
49. Reduce ink evaporation by using diaphragm pumps that heat inks less than mechanical vane pumps.
50. Install automatic ink jets to keep ink conditions optimal.
51. Use an evaporator to reduce the volume of nonhazardous waste ink or other waterbased materials.
52. Use high pressure water cleaning of screens to eliminate degreasers and emulsion/haze removers. Install a water filtration system for ink particulates. (May also need a DEP permit and emission control equipment for evaporator.)
53. Use waterbased inks with less than 10 percent VOC content. (This may require large capital costs to retrofit presses.)
54. Investigate UV/ECB curing systems.

Postpress Operations



55. Use waterbased, animal-based and hot-melt adhesives.
56. Avoid adhesives containing chlorinated solvents.
57. Avoid chlorinated solvents for cleaning adhesive residues. Use alternative petroleum solvents, if possible.
58. Use waterbased coatings, UV varnishes and hot-melt adhesives for in-line and off-line surface coating.

Solid Waste Opportunities

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- 59. Require vendors to take back unused products.
- 60. Require vendors to use less packaging, provide smaller samples, or take back unused materials.
- 61. Recycle used aluminum printing plates.
- 62. Clean out ink containers as much as practical and, if possible, recycle them.
- 63. Purchase paper stock with preconsumer and postconsumer waste.
- 64. Minimize use of packaging materials for printed product delivered to the customer.
- 65. Recycle all paper wastes. Segregate white and office paper from production paper wastes.
- 67. Recycle waste corrugated cardboard.
- 68. Recycle used or broken pallets.