Workers Work for Waste Reduction

Pollution prevention through improved workplace practices

The basic framework for pollution prevention through improved workplace practices involves the following:

- raising employee awareness
- materials management and inventory control
- process improvement
- periodic, in-house audits

Raising employee awareness is the best way to get employees to actively participate in a pollution prevention program. Materials management and inventory control means understanding how chemicals and materials become wastes. With this information, opportunities for pollution prevention can be identified. Process improvement through workplace practices requires re-evaluating day-to-day operations that make up the printing and screen reclamation processes with the goal of waste minimization and pollution prevention. Finally, periodic in-house audits can be used to assess the success of a pollution prevention program. Assessing and quantifying success can give both operators and managers the incentive to strive for more ambitious projects to reduce wastes or improve process efficiency.

Workers are key to the success of a waste reduction program, especially in the screen printing industry where the worker is directly involved in the screening process. Quality issues, rejects, and delivery time are all directly involved with the worker's skill and motivation to do a good job. A successful P2 program cannot happen without workers understanding the need for waste reduction, and then how the required changes will affect their jobs. Management must actively seek input from employees, and actively support and reward workers that help the company achieve its waste reduction goals. Some companies have set up incentive programs or have contributed savings from P2 projects into an employee fund for special programs or events.

Workplace practices and their benefits

- Keep chemicals in safety cans or covered containers between uses. This minimizes material losses from evaporation and spills, reduces worker exposure, and increases worker safety.
- Use plunger cans, squeeze bottles, or specialized low-flow spraying equipment to apply chemicals to the screen and cleaning wipes. Covered and/or metered dispensing reduces potential for accidental spills and excess materials use, and reduces worker exposure.
- Consider manual, spot-application of chemicals, instead of flooding the screen. This reduces materials use and worker exposures to aerosol mists.
- Use a pump to transfer cleaning solutions from large containers to smaller containers used at work stations to reduce potential for accidental spills and consequent worker exposures.
- Use press wipes as long as possible. Soiled wipes can be used for the initial pass and a clean one for the final pass. Store the wipes in a covered can to prevent solvent evaporation and use them for the first pass on the next screen. This approach yields more efficient use of the towel, and reduces solvent evaporation and worker exposure to solvent vapors.
- Evaluate alternative chemical-to-water dilution ratios. Increase the amount of water used while maintaining the cleaning effectiveness. This reduces chemical usage with no loss of efficiency and reduces worker exposure.
- Avoid delays in cleaning and reclaiming the screen. If screens are cleaned promptly, cleaning is much easier and the chemicals needed to remove ink, emulsion, and haze can be reduced.

- Gravity-drain, wring, or centrifuge excess solvent from used wipes. Some printers realize significant savings in their chemical costs by recovering solvent from used wipes. The recovered solvent can be re-used as is, or collected for recycle through a solvent still to recapture clean solvent for reuse.
- Place catch basins around the screen during the screen cleaning/reclamation process. Some screen printers collect the used solvents and chemicals for reuse as is, and some run them through a still to remove ink pigments and then recapture a clean solvent.
- Use appropriate personal protective equipment (gloves, barrier cream, respirator, etc.) to reduce worker exposures.
- Establish a sound inventory control system. For detailed information on ways to improve your bottom line through inventory controls, see the fact sheet: *Is your Inventory Controlling You?*, which is available at the Small Business Environmental Assistance Program Web site at ***www.sbeap.org***.

In addition to workplace practices, several types of equipment can be used in screen reclamation to prevent pollution. Such equipment includes sprayer/applicator systems, washout booths, filtration systems, recirculation systems, and distillation units.

Use of sprayer/application systems to apply screen reclamation chemicals to the used screen may reduce losses and potential exposures with more effective application. A washout booth can also minimize exposures and waste by containing the reclamation process in a confined area, and collecting spent chemicals for proper reuse or disposal.

Filtration systems can be used to remove specific substances from the waste stream, facilitating compliance and allowing the reuse of some chemicals. Recirculation systems are generally required to reuse captured chemicals. Typically, recirculation systems are used in conjunction with filtration systems, washout booths, and/or sprayer application systems. Distillation devices can provide an effective means of recycling and reusing spent solvents.

Each printer needs to examine his or her particular process to determine the applicability of any or all of the above equipment modifications. In addition, printers should consult applicable water and waste disposal regulations to ensure compliance before making equipment changes.

Resource

The Printers' National Environmental Assistance Center, PNEAC, is an environmental resource center for the printing industry to businesses with environmental regulatory and pollution prevention issues. Visit the PNEAC Web site at ***www.pneac.org***.

The SBEAP operates a toll-free hotline you can call for additional technical assistance. SBEAP can also visit your facility to review current compliance needs and identify pollution prevention opportunities. Call SBEAP at 800-578-8898 or visit our Web site at ***www.sbeap.org*** for confidential, free, technical assistance.

K-STATE
Kansas State University

Notice of nondiscrimination
Kansas State University is committed to nondiscrimination on the basis of race, sex, national origin, disability, religion, age, sexual orientation, or other nonmerit reasons, in admissions, educational programs or activities and employment (including employment of disabled veterans and veterans of the Vietnam Era), as required by applicable laws and regulations. Responsibility for coordination of compliance efforts and receipt of inquiries concerning Title VI of the Civil Rights Act of 1964, Title IX of the Education Amendments of 1972, Section 504 of the Rehabilitation Act of 1973, the Age Discrimination Act of 1975, and the Americans With Disabilities Act of 1990, has been delegated to Clyde Howard, Director of Affirmative Action, Kansas State University, 214 Anderson Hall, Manhattan, KS 66506-0124, (Phone) 785-532-6220; (TTY) 785-532-4807.

This publication was created by Kansas State University's Pollution Prevention Institute through the Small Business Environmental Assistance Program (SBEAP). SBEAP's mission is to help Kansas small businesses comply with environmental regulations and identify pollution prevention opportunities. SBEAP is funded through a contract with the Kansas Department of Health and Environment. SBEAP services are free and confidential. For more information, call 800-578-8898, send an e-mail to SBEAP@ksu.edu, or visit our Web site at ***www.sbeap.org***. Kansas State University is an EEO/AA provider.