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Pollution Prevention (P2) in Action

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Printing

Regulation and Inspection

There are three main printing methods used commercially, these are Lithographic, Screen and Flexography. Environmental compliance inspectors regularly visit these facilities because of hazardous chemicals used in the printing process. Shop owners and operators are responsible for taking several precautions to ensure that workers, the public and the environment are protected. Precautions must also be taken to prevent any harmful chemicals or materials from polluting the environment.

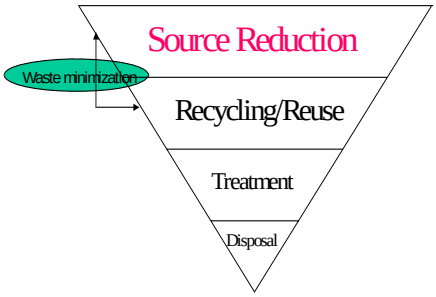
Complying with environmental laws and reducing health and environmental risks at the source through pollution prevention, is a first step to help ensure worker and community safety. Changing to safer technologies can further these efforts to protect our air, water and land; prevent risk of future liability and even reduce costs associated with the generation of waste.

Typical Wastes

Wastes typically generated through various printing operations include:

- Plating etch, gravure cylinder baths (acids, alkalines, toxic heavy metals)
- Spent solvents (alcohols, benzene, toluene, methanol, methyl ethyl ketone, trichloroethylene, perchloroethylene, 111-trichloroethane, carbon tetrachloride, naphtha, methylene chloride, methyl cellulose acetates)
- Waste ink, sludge (toxic pigments, toxic heavy metals-chrome)
- Photographic, stencil films (acids, alkalines, peroxides, formaldehyde)
- Blockout, screen filter (solvents)
- Rags, wipers (flammable solvents)
- Expired chemicals (avoid this by rotating first in first out; order only as needed)
- Wastewater (minimize use of sinks and drains by using parts washers; contact sewer agency for wastewater requirements)
- Solid waste (ink cans-scrape & recycle; recycle office waste paper, bottles, cans)

Waste Management Hierarchy
(US EPA Policy, 1976)



Pollution prevention (P2) is reducing waste at the source = Source Reduction.

P2 is using less toxic materials and using resources efficiently (including water and energy) to reduce the generation of waste.

P2 can save businesses money while protecting our environment.

INSIDE

Energy and **water** are precious resources for our community. Do your part to save by having an audit done; check for water leaks and fix immediately; install the latest technologies and replace incandescent lights with low mercury fluorescent or non-mercury LED lighting. Visit:
HECO www.heco.com
BWS www.hbws.org (Oahu)

HAWAII STATE DEPARTMENT OF HEALTH

LINDA LINGLE
Governor

DR. CHIYOME FUKINO
Director of Health

Pollution Prevention (P2) Action

Use less toxic cleaners: Water based, soy based and acetone based cleaners have shown to be effective for the printing industry. These cleaners are typically non-VOC or low VOC emitting and reduce worker exposures to toxic chemicals. Be sure to check products for compatibility with rollers and blankets. For example cleaners with acetone concentrations below 30% worked well for both nitrile and EPDM type rollers, however even small amounts of soy should be avoided for EPDM as it may cause swelling. Always check with the manufacturer for compatibility concerns. The University of Tennessee has conducted a series of compatibility tests for printing cleaners, their report (3.5 MB) can be viewed at: http://www.aqmd.gov/rules/doc/r1171/UT_Complete.pdf

What is Low VOC?: Volatile organic compounds (VOCs) are chemicals that evaporate or dry out quickly releasing chemical compounds to the air. This is a leading cause of air pollution, smog and worker safety issues.

Higher VOC products may contain over 800 grams per liter; Low VOC products typically range below 100 grams per liter. Low VOC and non-VOC less toxic type products are the best pollution prevention choice.

Hazardous air pollutants (HAP): Perchloroethylene (Perc), toluene, glycol ethers, 111-trichloroethane and blends containing benzene compounds emit toxic air emissions that may cause cancer or other health effects.

Assess your inventory of these items, take precautions when using them and begin replacing them with less toxic water, soy or acetone based alternatives.

Use less toxic inks: Waterborne, biobased, low VOC and Ultraviolet inks that use non-metal pigments.

Electronic imaging and laser plate making: These procedures and presensitized plates using only water can eliminate photographic (film, solutions) and plating (acids, metals) wastes.

Reduce ink waste: Keep ink containers tightly closed to avoid drying and dust contamination. Combine waste inks to produce a mid to low quality black ink available for other projects. Recycle ink.

Reuse & Recycle: Most waste can be seen as a resource in closing the loop for recycling. Offer extra paper for reduced rate. Separate wastes for more efficient and cost effective recycling and recycle all white paper, mixed paper, cardboard, plastics, wood and metal.

Promote Recycled-Content Paper to your Clients: To demonstrate the importance of using recycled-content paper take a moment to visit the Environmental Defense Paper Calculator at: www.environmentaldefense.org/papercalculator. Here you will be able to compare the environmental impacts of paper. Enter 100% recycled content and see the environmental savings. Recycled-content paper of at least 30% is now required of all Federal and State agencies with many projects specifying 100% recycled-content which has improved in quality.

Customers when ordering a "green" or "environmentally friendly" print job, may request:

- Paper that is processed chlorine-free
- Paper w/ postconsumer recycled-content of 30% or more
- Paper in standard size to reduce paper trim waste
- Use of inks and press chemicals with low volatile organic compounds (VOCs)
- Inks and chemicals that are less toxic (soy, water or bio-based products, inks, washes)
- A more recyclable after life (glue-less binding, uncoated paper, no foil stamping, lighter color and non-fluorescent papers)
- Minimal use of ink, less color

Stay informed: Many case studies have been conducted and many resources are available on-line to help make your business more efficient, safer for workers and a steward of the environment. Here are web sites to get you started:

Printing Partnership Projects
www.epa.gov/oppt/dfe/pubs/projects/printing.htm

Flexography Printers
www.epa.gov/opptintr/dfe/pubs/projects/flexo/findings2a.htm

Screen Printers
www.wrppn.org/irta/screen.pdf (4.5MB)

Lithographic Printing
www.wrppn.org, Resources, Hubs, Printing-Lithographic
www.wrppn.org/irta/Alt%20Litho.pdf (5.5 MB)

Mahalo to the Institute for Research and Technical Assistance (IRTA), the Western Regional Pollution Prevention Network, Environmental Defense and U.S. EPA for providing the resources for this bulletin.

Note: Final determinations of the proper handling and disposal of waste are the sole responsibility of the waste generator. For more information, contact the DOH Solid and Hazardous Waste Branch, phone: 808-586-4226 or visit our website: http://www.hawaii.gov/health/environmental/waste/index.html

"P2 is a choice; being "green" is making that choice."