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Keep Your Shop in Tune

If your shop is tuned up and running smoothly, you will generate fewer wastes. Following the practices described in this manual will help keep heavy metals, oils, grease, and other pollutants out of the Bay.

This manual describes specific Best Management Practices (BMPs), and is intended as guidance on pollutant control for commercial print shops and other print-related industries. Many formerly non-regulated activities are now coming under increasing scrutiny and some once acceptable practices are no longer allowed. BMPs are procedures that will assist you in complying with the environmental requirements of Union Sanitary District, the Alameda Countywide Clean Water Program (ACCWP), California state agencies, and federal agencies.

This section summarizes the principles behind the BMPs and describes general guidelines you can use to keep your shop in tune. **Mandatory and recommended BMPs** are described in the following section.

Run a dry shop

You can comply more easily with sanitary sewer and storm water requirements by cutting down on the liquids you discharge. If you are successful, your discharge will be limited to wastewater from your lavatories to the sewer and rain water from your roof and parking lot to the storm drain. Any drains that carry wastewater from your shop must be connected to the sanitary sewer, never the storm drain. Check with Union Sanitary District before connecting any drains to the sanitary sewers; sanitary sewer connections require the approval of USD. Some wastestreams may need to be treated before discharge.

Clean up leaks, drips, and other spills without water whenever possible. Use rags for small spills, a damp mop for general clean up, and dry absorbent material for larger spills. Clean up spills immediately. Avoid hosing or wet-mopping your work areas.

Be a “zero discharger”

If you succeed in making your shop a dry operation, you can seal off your floor drains and sinks, and attain zero discharge of cleanup and process wastewater. (Before sealing off any floor drains, be sure to check with your local building and fire departments to ensure the drain is not required to meet their requirements.) Prevent leaks and spills to avoid wet cleanup. Reduce or eliminate the hazardous materials you use to reduce the quantity of hazardous waste you need to dispose. If you are a zero discharger, you may not need to permit, monitor, and maintain a non-domestic sewer connection and will not need to install costly pretreatment equipment. Contact Union Sanitary District to determine whether you need a permit if you are a zero discharger.

“Close the loop”

A closed-loop system is an easy path to pollution prevention. If you reuse or recycle fluids and other products, they never become a waste to dispose. Close the loop by purchasing reusable or recyclable materials whenever you can. By sending used liquids to a recycler, you can take advantage of special hazardous waste exemptions and cut down on the expense and paperwork of handling waste liquids. There are companies that are fully licensed to transport, store, treat, and recycle photographic waste materials. To help avoid disposal problems, check with vendors or suppliers, before accepting any samples, to be sure that unused portions can be returned.

Train employees and keep customers informed.

Employee misunderstanding about how to handle waste might lead to a costly pollution incident. Make sure that all your employees understand and implement the practices in this manual. Educate your customers, as well, and prevent them from disposing improperly on your site.

Typical Commercial Printing Industry Wastestreams

Waste photochemical solutions and films: some of these are classified as hazardous products and may also be hazardous wastes under State regulations.

Waste inks containing hazardous components (often metallic pigments and solvents).

Ink contaminated solvents and rags used for cleaning.

Lubricating oils from machinery.

Pollution Prevention Incentives

Pollution prevention can be an effective, economic way to minimize hazardous waste management costs. In some instances, it may require some initial capital investment but many companies have shown that, even in the short term, they can quickly recover these “up-front costs” when hazardous waste management and liability costs are minimized. Other advantages include:

Reduced tax burden from generator fees, land disposal fees, and taxes

A safer workplace for employees

Reduced compliance requirements

Reduced threat to the environment

Improved corporate image in the community

BEST MANAGEMENT PRACTICES (BMPS)

This section contains BMPs keyed to specific shop activities, and describes **MANDATORY AND RECOMMENDED** management practices to control waste from that activity.

As a rule, the BMPs are intended to describe "state of the practice," to be implemented every day for the indefinite future, except where the practice is not reasonable or economically feasible. Many of these practices are straightforward, common sense housekeeping activities, and many may already be in place in your shop.

These practices are intended to help you comply with sanitary sewer and storm water requirements.

Image Processing

Silver compounds are classified as hazardous wastes under State and Federal law if liquid wastes exceed five milligrams per liter of silver. If process baths are discharged into the sewer, a permit may be required by Union Sanitary District. Concentrations of silver-contaminated wastewater must be maintained **below the local limit of 0.5 milligrams per liter**.

MANDATORY BMPs:

1. Purchase a silver recovery unit and recover silver from fixer and wash water on site. The minimum acceptable treatment for fixer is an electrolytic unit with at least two tailing canisters, in series. The minimum acceptable treatment for wash water is two tailing canisters, in series. The recovered silver can be sold to a commercial recycler.

-OR-

2. Contract with a service that will transport, store, treat, and recycle silver bearing photographic waste.

RECOMMENDED BMPs:

1. Add ammonium thiosulfate to silver-contaminated baths to extend the allowable buildup of silver.

2. Use floating lids on bleach and developer containers to keep them fresh.

3. Install waterless paper and film developing units to minimize the volume of fixer waste. Segregate fixer from developer.

4. Substitute nonhazardous raw materials for hazardous materials whenever possible.

5. Install electronic imaging and/or laser platemaking. By editing on a video terminal, the need for photographing and reshooting can be reduced. This alternative is costly. Make sure the payback period is evaluated before making a purchase.

6. Protect process baths that spoil easily by keeping them containerized. Small scale photodevelopers can containerize process baths and use glass marbles to bring the liquid level to the brim each time the liquid is used.

Plate Processing

MANDATORY BMPs:

1. Metal plate-making wastes, such as acids and alkalis used to clean or develop the plates, and the wastewater generated must be drummed for disposal.

RECOMMENDED BMPs:

1. Replace metal etching processes with a process that generates less waste wherever possible. Alternative plates include: presensitized lithographic, plastic or photopolymer, flexographic, and electrostatic.

Printing and Finishing

Copper compounds are classified as hazardous wastes under State and Federal law if liquid wastes exceed twenty-five milligrams per liter of copper. If cleanup baths are discharged into the sewer, a permit may be required by Union Sanitary District. Concentrations of copper-contaminated wastewater must be maintained **below the local limit of 2.0 milligrams per liter**.

Many clients would use less hazardous products if given the choice, provided that product quality is not compromised. Inform clients of specific inks that are recyclable or are not hazardous and provide samples illustrating finished products. Encourage them to select these materials.

The composition of inks varies widely. Some inks contain chemicals that would be classified as hazardous but others do not. Inks frequently get their color from the metals or hazardous pigments they contain. Inks containing metals and/or those using a solvent carrier are often classified as hazardous. It is the responsibility of shop owners to determine whether the inks used in their operations are hazardous. For assistance in making the determination, review the container label, the MSDS, or ask your ink distributor.

Most inks can be recycled; they are often blended to make black ink. For smaller print shops, consider coordinating with larger plants or newspaper publishers that use a rubber- or oil-based ink to recycle your nonhazardous ink. These businesses usually recycle their inks onsite or ship them off-site in bulk shipments. Also, consider purchasing inks from a distributor who will take or buy back unused or spent inks.

MANDATORY BMPs:

1. Concentrated inks, both solvent- and water-based, **CAN NOT** be discharged to the sanitary sewer.

2. Recover as much ink as possible. Preclean ink trays with rags before water rinse.

3. Fill ink fountains only enough for a particular run or shift. Return all unemulsified inks to their containers.

4. Clean ink fountains only when changing colors or when the ink might dry out between runs to minimize waste ink generation.

RECOMMENDED BMPs:

1. Install automatic ink levelers to keep ink fountains at their optimal level for good print quality in large web presses.

2. Run similar jobs simultaneously to minimize waste generation between cleanup and start of the next run.

3. Use water-based inks whenever possible to cut down on the use of solvent-based inks that cause employee and environmental hazards.

4. Fountain solutions can be left overnight if sprayed with special nondrying aerosol materials.

5. Dedicate one press for inks with hazardous pigments or solvents.

6. Save old inks and market as “house colors.”

7. Donate unemulsified inks to trade schools, colleges, etc.

Selecting and Controlling Inventory: - RECOMMENDED BMPs:

1. Careful selection and management of the materials you use can make a big difference in your waste handling and disposal and can save you money.

2. Choose materials that can be recycled. Whenever possible choose inks, cleaning solutions, and other materials that are non-toxic. Water-based cleansers can provide acceptable cleaning; experiment with concentrations to find one that works. Avoid halogenated compounds, petroleum-based cleansers, and cleansers with phenol. These are highly toxic, cause difficult problems if spilled to a sewer connection, and are often costly to recycle or dispose. Control your inventory to reduce the wastes you generate. For example:

Keep on hand only the quantities of materials that you need and use them on a "first-in, first-out" basis, to avoid the need to discard unopened cans when the materials' shelf lives expire.

Consider reducing the number of different brands or grades of materials that you need to reduce the number of containers.

Where possible, select suppliers who provide fresh materials and accept the used materials for recycling in order to "close the loop."

Isopropyl Alcohol - RECOMMENDED BMP:

Use a fountain solution that contains low concentrations of isopropyl alcohol (IPA) or one containing no IPA. IPA emissions can cause air pollution problems and may require the installation of pollution control equipment. Substitutes are available. Operational adjustments may be required to make them work well, but the alternative cost of air pollution control equipment installation can make the effort economically worthwhile.

Identifying and Controlling Wastewater Discharges

MANDATORY BMPs:

1. Inspect your shop to be sure you have no unauthorized connections to the sanitary sewer or storm drain system. Sanitary sewer connections require the approval of Union Sanitary District. Storm drain connections from indoor drains or sinks are prohibited. (These are known as "illicit connections" and are subject to enforcement by the ACCWP and the municipalities in Alameda County.)

2. Make sure employees do not pour waste liquids into floor drains, sinks, outdoor storm drain inlets, or other connections. Post signs at sinks to remind employees.

RECOMMENDED BMP:

If your dry cleanup practices are successful, you can seal off your drains and become a zero discharger. Permanently seal the drain when you can, or use a temporary inflatable plug for an immediate response. (Check with your local fire and building departments before sealing off any floor drains to ensure the drain is not required to meet their requirements.) You many wish to use the plugged drain as a sump to collect cleanup water or spilled liquids. Pump the liquid into a drum when you need to empty the sump. Check with your HazMat authority or fire department for requirements they may have for this type use of a sump.

Storing and Disposing of Waste

MANDATORY BMPs:

1. Store and handle hazardous wastes in special hazardous waste containers, or closed drums within a secondary containment that is approved by your fire department and HazMat authority.

2. Spent fixer and other liquids that you hold for recycling are special categories of hazardous waste. They must be stored on your site in accordance with hazardous waste requirements, but can be transported under somewhat less stringent requirements. Many recycling services have special variances or permits that reduce your paperwork requirements and allow shipping at reduced cost.

3. If you store materials outdoors, keep them under a roof, cover, or tarpaulin. (Be sure to check with your local fire department before adding or making structural changes to your building.) Keep solid wastes in a covered dumpster to be picked up by municipal trash services. Do not let rain water contact old parts or dumpsters. Keep scrap parts or other metals in a shed or under a roof, out of the rain. Oily contaminants can wash off long after you think all the oil has drained from parts.

4. If you keep liquid containers outdoors, keep them on a paved impermeable surface and within a berm or other secondary containment to prevent spills from running off into the yard. This is recommended if the liquids are not a hazardous waste and mandatory if they are. Put a lid or cover on buckets or barrels, because any rain that enters becomes an oily waste. Consider keeping all your waste oil and other hazardous liquids indoors or in a locked area, to keep nighttime trespassers away.

RECOMMENDED BMPs:

1. You might save money if you use more than one drum to hold different hazardous wastes. Keeping photoprocessing chemicals and solvents separate from other hazardous wastes may reduce the cost of shipping and disposing of them. To be sure you aren't violating hazardous waste requirements, don't contaminate sewer discharges and clean trash with small amounts of "hot" wastes. Also, be sure to check with your local fire department about storage quantity requirements before separating hazardous materials.

2. In most cities of Alameda county, the municipal fire department is the HazMat authority that controls hazardous materials storage, handling, and response. Some locales contract with the Central Fire District or the County Health Department. For information about hazardous waste regulations, call Alameda County Department of Environmental Health or Cal EPA's Department of Toxic Substances Control.

3. Collect waste paper for delivery to a recycler.

Waste Solvents

MANDATORY BMPs:

1. Discharge of solvents to the industrial sewer is not allowed.

2. All waste solvents must be drummed for recycling or offsite disposal.

RECOMMENDED BMPs:

1. Waste solvents are generated when cleaning presses. These wastes are considered hazardous and should be recycled. For a listing of recycling companies, check CalRecycle.ca.gov or contact the Department of Toxic Substances Control at (800) 728-6942.
2. Rags contaminated with inks and/or solvents may be hazardous waste. For further clarification, contact Alameda County Department of Environmental Health at (510) 567-6700.

Solvent Alternatives

Use soap or detergent solutions wherever possible. Use solvents only for cleaning inks and oils.

Specially made blanket washes that do not contain hazardous materials are now available. These washes also meet emission requirements on the various air pollution control districts in California.

Small solvent recovery systems are currently on the market and work well.

Many acetic acid-based solvents are on the market that are less toxic than other solvents.

Waste Lubricating Oils - MANDATORY BMP:

Lubricating oils are to be managed as hazardous wastes when they have no further use. Check CalRecycle.ca.gov/usedoil/ for information on waste oil handling. For large quantities of oil, Check the DTSC Registered Hazardous Waste Transporter Database to find a hauler.

Training and Educating Employees and Customers

MANDATORY BMPs:

1. Train your employees to use the practices in this manual. When you first implement them, review your current practices to see how they compare and change practices where it is appropriate. Thereafter, assign experienced workers to train new employees. Review procedures as a group at least once a year.

2. Check employees' work practices to be sure the BMPs are implemented properly. Post signs as reminders, such as notices not to pour liquid wastes into sinks and floor drains. Develop a routine to inspect shop equipment and procedures regularly. A once-a-week walk-through can help identify potential difficulties before they become major problems.

RECOMMENDED BMPs:

1. To keep abreast of new developments, participate in workshops, trade association meetings, and seminars. Trade association publications can be valuable sources of information. Modify your practices whenever you find a new idea that serves your shop better.

2. Encourage your customers to be waste-conscious. Stencil “No dumping! Drains to Bay” signs at storm drains. Contact your municipality for stencils.

3. Be aware of customer activities on your site. If they dispose of materials improperly, you will be responsible for the violation. Ask your customers not to discard liquids into your trash cans or to storm drains. If you have persistent problems, you may need to monitor your customers more carefully at the storm drains and other potential disposal areas on your property.

4. Let your customers know how you are minimizing wastes and recycling to show that you are a “good neighbor” and encourage your customers to be the same.

IMPORTANT PHONE NUMBERS/WEBSITES

Alameda County Department of Environmental Health	(510) 567-6700
CalRecycle (used oils)	calrecycle.ca.gov/usedoil/
Department of Toxic Substance Control Waste Evaluation Unit	(916) 324-1807
Department of Toxic Substance Control	(800) 728-6942
DTSC Registered Hazardous Waste Transporter Database	hwts.dtsc.ca.gov/transporters/
Union Sanitary District	(510) 477-7500