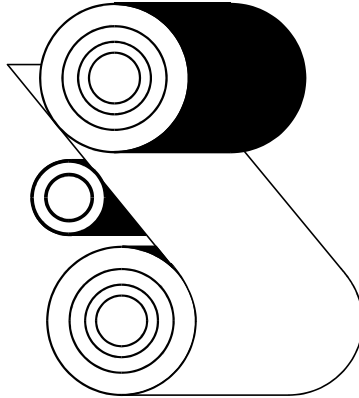
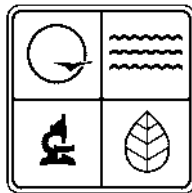


Preventing Pollution in Lithographic Printing



A Guide to Environmental Compliance and Pollution Prevention for Lithographers in Missouri



Missouri Department of Natural Resources
Environmental Assistance Office
1-800-361-4827

October 2004

The information in this publication is intended as general guidance only. For specific requirements, the reader should consult the appropriate federal and state laws and rules.

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Missouri Department of Natural Resources
"Integrity and excellence in all we do"

Preventing Pollution in Lithographic Printing

As environmental protection becomes more and more important across the nation, industries of every type are faced with some big questions:

- What environmental regulations apply to me and my facility?
- How do I comply with those regulations?
- Are there things I can do to reduce the regulations I must meet?
- How can I protect myself from fines and liability?
- How do I protect myself and my workers from environmental hazards at work?

This publication can help lithographers in Missouri answer some of those questions. This guide provides basic information about regulatory requirements and suggestions for protecting yourself, your workers and the environment through pollution prevention.

Each guide sheet in this publication deals with an issue that you may face in your lithographic printing business. The guides will not answer every question you have. After reviewing them you should be able to decide if you need more information or assistance on a particular issue. The topics are listed on the back of this page. If you do photoprocessing at your business, call 1-800-361-4827 to get a free copy of *Preventing Pollution in Photoprocessing*.

The Missouri Department of Natural Resources has an Environmental Assistance Office (EAO) to help people comply with environmental regulations and find ways to prevent pollution. If you need assistance, call the Environmental Assistance Office at 1-800-361-4827.

Guide Sheets for Lithographic Printing

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Air Quality
Backflow Prevention
Coatings
EPCRA and Form R Reporting
EPCRA and Tier II Reporting
Floor Cleaning
Fluorescent Bulbs
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Storm Water Permits
VOCs and HAPs
Wastewater
Contact List

If you have comments or suggestions for ways to improve these guide sheets, please let us know by calling the Environmental Assistance Office at 1-800-361-4827.

For More Information

Missouri Department of Natural Resources
Environmental Assistance Office
P.O. Box 176
Jefferson City, MO 65102-0176
1-800-361-4827 or (573) 526-6627
www.dnr.mo.gov/oac/env_assistance.htm



Pollution Prevention

Lithographic printing facilities deal with many things that can affect the environment. Materials such as ink, fountain solutions and solvents can harm the environment and people if they are not properly managed. State and federal environmental regulations explain what legally can and cannot be done with these materials. The regulations describe how pollution (waste) should be controlled, stored, treated or disposed of. A better solution is to prevent the waste or pollution.

What is Pollution Prevention?

Pollution prevention is simply not making the waste (or pollutant) in the first place. It means doing what we can to reduce the amount and toxicity of the pollution we generate. Preventing pollution may be something as simple as using a catch-basin to prevent spills, or something as complex as redesigning an operation to increase efficiency and reduce waste. Simple things like choosing non-hazardous solvents can protect the environment and reduce the number of environmental regulations you face. Pollution prevention means thinking about the environmental impact of your actions, and trying to limit that impact.

Why Prevent Pollution?

When we generate waste or pollution, we must safely and legally manage that waste or pollution. Whether it is household trash or waste from a business, managing wastes costs money. And usually the things we discard are materials we paid for when we got them. A good example is paper towels. We buy them, use them once, then pay again to have them disposed of. If we reduce the amount of waste we generate, we save money. It's as simple as that. Reducing costs is a major reason to prevent pollution. Here are a few others:

- Improved work environment and worker safety.
- Reduced liability.
- Increased efficiency.
- Fewer regulatory requirements.
- Better environmental protection.
- Enhanced marketing and public relations opportunities.

What Can Be Done At Lithographic Printing Facilities?

There are many ways to prevent pollution at lithographic printing facilities. Each of these guide sheets has suggestions on ways to prevent pollution. Here are a few general tips:

- Keep work areas clean and well organized to help prevent accidents.
- Use drip pans and splash guards where spills frequently occur.

- Fix leaks immediately.
- Don't buy more than is needed. The leftovers may become waste.
- Purchase the largest practical container (containers usually end up as waste), but don't purchase more than is needed.
- Purchase the least toxic or hazardous product available. Check the material safety data sheets for products you purchase. If the product is toxic or hazardous, ask your supplier for alternatives.
- Use the oldest items first (first-in, first-out).
- If you do have excess or unneeded materials, see if your supplier can take them back.
- Include the cost of disposal when making purchasing decisions. What looks like the cheapest option may cost more because of disposal or other management costs.
- Store materials in a way that keeps them from being damaged.
- Inspect storage areas regularly for leaks.
- Make sure all items are clearly labeled. Store products in original containers.
- Store wastes separately and be sure they are properly labeled to make it easier to reuse or recycle them.
- Store items that could leak in a place where leaks will be contained and easily spotted.
- Make a list of your wastes, then try to find a way to eliminate each of them. For example, if you throw away paper towels, consider using launderable shop rags.

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Aerosol Cans

Lithographic printers use aerosol cans for various reasons including film cleaning and garment tacking. Spray cans may contain hazardous chemicals, such as 1,1,1-trichloroethane or toluene. In some cases, the aerosol can may be hazardous waste because of what it contains or did contain. It is important to carefully manage this waste to protect human health and the environment.

Aerosol cans are often recycled as scrap metal. If the empty cans are recycled, the can and the residue in it are not considered waste so most hazardous waste regulations do not apply. If the can is not empty, it can still be recycled if the recycler is able to properly capture and manage the vented contents. However, if the aerosol can contained an acutely hazardous waste such as some pesticides, it is unlikely that the recycler is able to properly clean the container. These containers will probably require disposal. See the *Hazardous Waste* guide sheet for more information on acutely hazardous waste.

Empty aerosol cans can be recycled or sent to a sanitary landfill for disposal.

If you have one or two waste aerosol cans infrequently, you can send them to a sanitary landfill for disposal (even if they are not empty) if the landfill is willing to accept them. If you generate more cans than that, you need to find out if the waste you have is a hazardous waste and manage the waste properly. See the *Hazardous Waste* guide sheet for more information.

Ask your supplier to take back any defective cans. The manufacturer can sometimes repackage the materials.

Remember

- Aerosol cans can be hazardous waste. You need to find out if your waste is hazardous and manage it properly.
- Empty cans – and sometimes cans that aren't empty – can be recycled. Sometimes the contents can be reused.

Pollution Prevention Options

Preventing pollution instead of treating or disposing of it can save money, protect the environment and reduce risk to people. Here are some suggestions:

- ✓ Decide if you actually need these products. If not, use up what you have and do not purchase any more. If you do need it, limit its use and look for aerosol cans that do not contain hazardous chemicals.
- ✓ Switch to non-aerosol products if possible, such as manual pump cans or bottles, especially if they can be refilled.
- ✓ Use as much as possible of the material for its intended purpose.

- ✓ Purchase only the amount you need.
- ✓ Follow label directions to prevent clogging.
- ✓ If your aerosol cans contain hazardous materials, look for non-hazardous alternatives.

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Air Quality

Some inks and solvents used by printers contain air pollutants called volatile organic compounds (VOCs). These chemicals help create smog. Many solvents are also hazardous air pollutants (HAPs). These chemicals can harm human health. See the guide sheet on *VOCs and HAPs* for more information.

To protect air quality and human health, federal, state and some local governments have rules to control air pollution. You need to find out what rules apply to your facility.

The Environmental Assistance Office (EAO) can help you decide what rules apply to you, send you the needed forms and help you fill them out. Call EAO at 1-800-361-4827.

The four major issues affecting you are:

- Emissions Inventory Questionnaire
- Operating Permit
- Construction Permit
- State rule in nonattainment areas

Emissions Inventory Questionnaire (EIQ)

An EIQ is a form that asks about the equipment you have and the chemicals you use. The information is needed to find out what you must do to protect the air quality in your area. The EIQ is used to calculate the amount of air emissions your shop could have if it operated at full capacity. This is called potential emissions. It is also used to find out your actual emissions. You need to complete an EIQ to find out if you need an operating permit or construction permit. The Department of Natural Resources also uses the EIQ to track air emissions throughout the state.

On the EIQ you will need to describe how jobs flow through your shop and what equipment you have. You will need to include the type and capacity of each press, parts washer and any other equipment that uses solvent-based ink or solvents. You also will need information from your material safety data sheets (MSDS).

After you send in an EIQ, you will be told whether you need to submit EIQs in the future. The EIQ is used to determine if a permit is required. Those businesses that are required to get a permit must report their emissions each calendar year and pay a fee per ton of emissions. If you make changes in your operation, such as switching solvents or inks, you will need to be sure these changes are reflected in your next EIQ.

Consider using low-VOC inks and solvents to reduce both potential and actual air emissions. Also, if possible, avoid using solvents that are HAPs.

Operating Permit

Facilities that could emit large amounts of air pollutants must get an operating permit under the Missouri Air Conservation Law. You need an operating permit if your facility has large potential emissions.

Most small lithographic shops will not need an operating permit. For help finding out if you need an operating permit, contact EAO or another environmental professional.

Construction Permit

You may need a construction permit before building a new shop or making changes to your existing shop. Adding or changing printing lines, adding on to your building or adding a parts washer are examples of changes that may require a construction permit.

If your shop started construction after May 13, 1982, or if you have made equipment changes since that date, it's possible that you should have had a construction permit. If that's the case, you still need the permit even if the construction is finished.

Contact EAO or another environmental professional for help deciding if you need a construction permit.

Keep in mind that even if you don't need an operating permit now, changes at your shop may increase your potential emissions and cause you to need a permit. It is wise to check with EAO or another environmental professional before making any changes that could increase potential emissions.

Local Requirements

Some parts of Missouri have local air quality requirements. If your facility is in St. Louis, St. Louis County, Kansas City or Springfield, the local agency will issue permits. These contacts are:

City of St. Louis

Division of Air Pollution Control
(314) 613-7300

St. Louis County

St. Louis County Department of Health
(314) 615-8923

Kansas City

Kansas City Health Department
(816) 513-6314

Springfield

Air Pollution Control Authority
(417) 864-1000

Elsewhere in Missouri

Missouri Department of Natural
Resources

Air Pollution Control Program
1-800-361-4827 or (573) 751-4817

Remember

- If you use solvent-based inks or cleaners, you need to complete an EIQ. You may need an operating permit. If you make changes at your shop, you may need a construction permit.
- When possible use low-VOC inks and cleaners and avoid using solvents that are HAPs.

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Backflow Prevention

Whether your business uses water from the public water supply or you have a private water supply such as your own well, it is important that you avoid contaminating that water. In some situations, water - and any contaminants it has come in contact with - can flow backwards in a water line. This can contaminate the water in your building and even the entire water supply. Backflow prevention devices prevent this problem.

If you have places where the water line comes into direct contact with a potential contaminant, the contaminant can travel back into the water line when there is a change in pressure. This is called a cross-connection. For example, if process water from your platemaking process flowed back into your water system, your entire water system could be contaminated with process chemicals. Backflow prevention devices or assemblies are installed in water lines to keep this from happening. They are placed in water lines entering the building and at points in the water system where it connects to a potential source of contamination.

If your business is connected to a public water supply, state regulations require that you protect the public water supply from cross-connections within your premises. If your operation could cause contamination to the water supply, you must have backflow prevention.

Drinking water regulations require that the backflow prevention assembly be placed on the water service line. It is a good idea to put additional backflow preventers at any location in your business where contamination could occur.

Your local water supplier may have additional requirements regarding backflow prevention. Contact that office to find out.

Even if your business is not connected to a public water supply, you should install backflow prevention devices to protect you, your employees and your customers from the risk of contaminated drinking water and to prevent pollution.

The Missouri Department of Natural Resources maintains a list of approved backflow prevention assemblies. To get a copy, contact the department at 1-800-361-4827.

Remember

- Preventing backflow into the water system protects you and anyone using your water supply.
- If you are connected to a public water supply system, you may be required to have backflow prevention assemblies or devices.

For More Information

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Coatings

Some print jobs require that some type of coating be used on the printed material. Depending on the type of overprint coating, these materials can be significant sources of air pollution and hazardous waste at your print shop.

Environmental Concerns

The major environmental issues associated with coatings are:

- **Air quality:** Many coatings contain volatile organic compounds (VOCs) or hazardous air pollutants (HAPs). These air pollutants can harm human health and the environment. Businesses with large VOC or HAP emissions are strictly regulated. See the *Air Quality*, and *VOCs and HAPs* guide sheets. Always look for low-VOC, HAP-free materials.
- **Hazardous Waste:** Coatings may be regulated as hazardous waste, usually because they have hazardous characteristics. A waste that has a flash point of less than 140° F is an ignitable hazardous waste. That means it will burst into flames at temperatures below 140° F. Corrosive hazardous wastes have a pH of 2 or lower or a pH of 12.5 or higher. Reactive hazardous wastes are wastes that are normally unstable, react violently with water, can explode or release poisonous gases.
- **Always ask your supplier** if the material you are buying is regulated as hazardous waste. If it is, ask for a non-hazardous alternative. See the *Hazardous Waste* guide sheet, for more information.
- **Solid Waste:** Solid wastes are those that can go in your regular trash. You should always try to reduce the amount of solid waste generated. Consider recycling the wastes you do have.

Coating Types

The most common types of coatings are listed here with comments about environmental concerns. Discuss these issues with your customers so they can consider them when making purchasing decisions. Many businesses successfully use environmental issues in their marketing strategies, selling environmentally preferable goods and services.

- **Varnishes:** Overprint varnishes usually contain a high percentage of volatile organic compounds (VOCs). Waste varnish may also be regulated as hazardous waste.
- **Ultraviolet (UV) and Electron Beam (EB) Coatings:** Usually UV or EB coatings do not generate air pollution or hazardous waste. However, there are significant issues related to employee safety when using and storing these chemicals. There is also a risk of excess waste because old product becomes unusable and because the chemicals can react unintentionally, becoming solid waste.
- **Aqueous Coatings:** Aqueous, or water-based, coatings generally have minimal environmental impact. Papers coated with water-based lacquer coatings can be recycled and re-pulped. Catalytic cured aqueous coatings can generate formaldehyde.
- **Lamination:** Solvent-based laminates release VOCs. These coatings may also make paper difficult to recycle.

Remember

- Coatings may contain air pollutants, may be hazardous waste and may raise issues of employee safety. Find out how your coatings are regulated and the rules that apply.

Pollution Prevention Options

Preventing pollution instead of treating or disposing of it can save money, protect the environment and reduce risk to people. Here are some suggestions:

- ✓ Work with suppliers to find non-hazardous coatings with little or no VOCs and no HAPs.
- ✓ Educate customers about environmentally preferable coatings. Customers often are willing to consider environmental issues in their decision-making. Consider including environmental issues in your marketing strategy.
- ✓ Consider the entire cost of the product you are purchasing. Indirect costs such as hazardous waste fees, time spent completing regulatory paperwork, use of personal protective equipment, waste disposal costs, cost of permitting, etc. should be considered along with the purchase price of any product.

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EPCRA and Form R Reporting

Most lithographic printers use chemicals that can pose a serious risk to human health and the environment, particularly in the event of a fire, flood or other emergency.

In 1986, the federal government passed the Emergency Planning and Community Right-to-Know Act (EPCRA), sometimes called SARA Title III. Missouri also has its own Community Right-to-Know Law. These laws require states, communities and businesses to work together on emergency plans for accidental chemical releases, emergency notification procedures, toxic emissions reporting and compiling an inventory of hazardous chemicals for planning and public review.

Under EPCRA, some lithographic printers need to complete a form called a Form R for certain chemicals they use over a given threshold. This form is part of the Toxics Release Inventory (TRI) which is a way for businesses to share information with the public about the chemicals they use. Many businesses have found that completing a Form R has helped them find ways to be more efficient and reduce waste.

In October of 1999, EPA issued a ruling that lowered the reporting thresholds for certain chemicals known as PBTs. These are chemicals that are persistent (P) in the environment, that bioaccumulate (B) in body tissues and are highly toxic (T). The threshold quantities for PBTs range between 10 and 100 pounds. One exception is for dioxin and dioxin-like compounds, which have a threshold of 0.1 grams. Other TRI chemicals are regulated at thresholds of 25,000 pounds for manufacturing and processing, or 10,000 pounds for otherwise use. PBTs are regulated at the lower thresholds regardless of use.

As a lithographic printer (SIC code 2752), you need to complete a Form R if you have 10 or more full time employees (or full time equivalents) and

- You manufacture or process more than 25,000 pounds per year of a TRI chemical, or
- You use (in some other way) more than 10,000 pounds per year of a TRI chemical, or
- You manufacture, process, or otherwise use a PBT chemical over the 10 or 100 pound threshold or over 0.1 grams for dioxin or dioxin-like compounds.

Note, most printers need not be concerned about PBT chemicals. The PBT list includes such chemicals as lead, mercury, hexachlorobenzene, octachlorostyrene, polycyclic aromatic compounds, PCBs and several pesticides. Most printers do not use these types of chemicals.

If you use other chemicals in the above quantities, you need to find out if they are on the TRI list. Your supplier should be able to tell you whether a chemical you purchase is a TRI chemical. The material safety data sheet (MSDS) may also have this information.

To get a copy of the list of TRI (or PBT) chemicals, contact the Missouri Department of Natural Resources at 1-800-361-4827. The table on the back of this page lists some of the TRI chemicals commonly reported by printers. Remember, this is just part of the list. If you use

chemicals in large amounts, check with your supplier or check the entire list to find out if they are subject to TRI reporting.

On the Form R, you will need to report the quantity of each TRI chemical you release to the environment or manage on- or off-site through energy recovery, recycling, treatment or disposal. The form must be completed each year by July 1 for the previous reporting year and submitted to both EPA and the state.

If you find that you should have been completing Form R's in the past, you will need to complete a form for each year that you should have filed and submit it as soon as possible. EPA does have a self-disclosure policy. If you meet the reporting criteria, penalties are usually mitigated. To file under this policy, contact Becky Dolph at EPA Region 7 at (913) 551-7281.

If you need a Form R and instructions, contact the department at 1-800-361-4827. If you need help deciding whether you must complete a Form R or if you need help completing the form, contact the department or another environmental professional.

Remember

- You need to complete a Form R if you have 10 or more full time employees (or full time equivalents) AND you process, manufacture or otherwise use a listed chemical over the specified threshold in a calendar year.
- If you did not submit a Form R and learn that you should have, you need to submit it as soon as possible. (Reporting of PBT chemicals and their lower thresholds started in the 2000 calendar year.)

Pollution Prevention Options

Preventing pollution instead of treating or disposing of it can save money, protect the environment and reduce risk to people. Many companies have found that completing a Form R has led to increased efficiency and better operations. You can use the Form R to:

- ✓ Find out how much of your purchased material is becoming waste.
- ✓ Identify priorities for pollution prevention projects.
- ✓ Measure progress toward reducing releases.

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TRI Chemicals Commonly Reported by Printers*

Toluene
Methanol
Methyl ethyl ketone
Glycol ethers
Formaldehyde
Phenol
Dichloromethane
Xylene
Ethylene glycol
Methyl isobutyl ketone

*This is not a complete list of regulated chemicals. Contact MDNR for more information.



EPCRA and TIER II Reporting

Most lithographic printers use chemicals that can pose a serious risk to human health and the environment in the event of a fire, flood or other emergency. Emergency responders are at particular risk if they respond to an emergency where these materials are stored.

In 1986, the federal government passed the Emergency Planning and Community Right-to-Know Act (EPCRA), sometimes called SARA Title III. Missouri also has its own Community Right-to-Know Law. These laws require states, communities and businesses to work together on emergency plans for accidental chemical releases, emergency notification procedures, toxic emissions reporting and compiling an inventory of hazardous chemicals for planning and public review.

Missouri's law requires markings on buildings, rooms and containers where hazardous chemicals are present. Markings must conform to the National Fire Protection Association (NFPA) 704 standard.

In Missouri, EPCRA is administered by both the Missouri Department of Natural Resources and the Missouri Emergency Response Commission (MERC).

To comply with EPCRA you need to find out if you have a regulated chemical in a regulated quantity. You can contact either the department or MERC to get a list of chemicals regulated under EPCRA. Depending on the type and quantity of material, you may need to:

- Complete a Tier II Form.
- Designate a facility coordinator to work with the local emergency planning committee (LEPC).
- Notify the department and the National Response Center if you have a release (spill).

Tier II Forms

To get a list of substances that require a Tier II form and the threshold planning quantities, or to get a Tier II form and instructions, contact MERC at 1-800-780-1014.

You need to complete a Tier II if you have:

- An extremely hazardous substance over the threshold planning quantity (TPQ) or over 500 pounds, whichever is lower, or
- More than 10,000 pounds of a hazardous chemical, at any one time, for which an MSDS is required under OSHA's hazard communication standard.

If you need to submit a Tier II, you also must pay a fee. The fee is \$100 for the first three chemicals and then \$20 for each reported chemical over three. Most of this money is used to support local efforts to prevent and prepare for chemical hazards and for hazardous materials training.

The Tier II form with the fee is submitted yearly on March 1 to MERC. You also must send copies of the Tier II form to your LEPC and the appropriate local fire department or emergency responder.

Facility Coordinator

If you have an extremely hazardous substance in amounts over the threshold planning quantity, you must choose a person at your facility to work with the LEPC. This person will be the first emergency contact listed in the Tier II form.

Spill Notification

If you have a spill (release) of an extremely hazardous substance or hazardous substance in excess of the reportable quantity, you must call the department at (573) 634-2436 and call 911 (or the appropriate emergency response number). You also must follow up with a written report to MERC and LEPC discussing the response measures taken and health information.

Form R

See the *EPCRA and Form R Reporting* guide sheet for more information on this. You need to complete a Form R if your facility:

- Has an SIC (standard industrial classification) code that begins with the numbers 20-39,
- Has more than 10 employees, and
- Manufactures, processes or otherwise uses certain toxic chemicals in excess of threshold quantities.

Remember

- If you have 10,000 pounds of a chemical requiring an MSDS under OSHA's hazardous communication standard, or if you have over 500 pounds (or the threshold planning quantity) of an extremely hazardous substance, at any one time during the year, you must submit a completed Tier II form to the fire department, LEPC and MERC.
- Even if you are not required to file an emergency plan, you should have an emergency plan at your facility and discuss it with your local emergency responders.

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Floor Cleaning

Floor cleaning at printing shops can have an environmental impact depending on the cleaning methods used. Floor cleaning is also important from a customer relations standpoint.

The most important step in preventing environmental problems from floor cleaning is to prevent spills. Use drip pans to catch fluid spills. Place wastes to be disposed of or recycled in proper containers. If you do have a fluid spill, clean it up immediately with the appropriate absorbents.

The first cleaning step should be to sweep the floor to remove loose, dry materials. If you have allowed hazardous materials to fall on the floor, it is possible that these sweepings could be hazardous waste. For example, inks may contain heavy metals such as chromium. If this spilled ink is mixed with floor sweepings, the sweepings could be contaminated with chromium.

Sweepings that are contaminated with hazardous materials will have to be tested. They will require special management and disposal if they are found to be hazardous. See the *Hazardous Waste* guide sheet for more information.

When washing the floor, do not use caustic cleansers or solvents that can cause damage to a public sewer and treatment system or to a private septic system. Biodegradable soaps are available and are usually gentler on both these systems. Be particularly cautious if your shop is not connected to a public sewer system. Septic systems can be seriously damaged by some cleaning chemicals and solvents.

If your facility is connected to a public sewer and wastewater treatment system, contact the treatment facility. Tell the facility operators about the materials you handle, and ask if they can accept your wastewater. There may be local regulations restricting what you can pour down the drain and discharge into the sewer system.

Do not discharge wash water to the outdoors. If you release wastewater off your property, you could be in violation of Missouri's laws.

Avoid hosing off the floor when dry sweeping is possible. Hosing off the floor uses a great deal of water, creates a greater risk of pollution and is usually not effective for cleaning oils or oil-based inks.

Remember

- If listed hazardous wastes are mixed with floor sweepings, all of the material is hazardous waste.
- Contact local sewer plants to find out about local requirements for wastewater discharged to them.
- Do not discharge wastewater outdoors.

Pollution Prevention Options

Preventing pollution instead of treating or disposing of it can save money, protect the environment and reduce risk to people. Here are some suggestions:

- ✓ Prevent spills and clean up spills immediately.
- ✓ Pre-clean the floor with a dry broom.
- ✓ Use biodegradable soap and water to do final cleaning.

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Fluorescent Bulbs

Many people use fluorescent lights. Fluorescent bulbs contain toxic metals such as mercury, cadmium and lead. Unbroken lamps pose no threat to human health and the environment. However, when fluorescent bulbs are broken, people may be exposed to toxic levels of mercury vapor and other metals which can be easily inhaled.

The Missouri Department of Natural Resources encourages prudent lamp recycling to safeguard human health and to limit the amounts of toxic heavy metals entering the environment.

If your business generates one or two lamps infrequently, and you are a conditionally exempt generator of hazardous waste, you may dispose of these in a Missouri sanitary landfill. Before disposal, place the lamp into the box the replacement lamp came in, put the box into a plastic bag and secure the bag at the top before placing it into the dumpster. These precautions will help keep the bulb from breaking right away and will help protect you and the trash hauler.

To better protect the environment, the Department of Natural Resources encourages you to send your lamps to a certified recycler.

Nonhazardous Lamps

If you know your fluorescent lamps are non-hazardous you may send them to a Missouri sanitary landfill or to a lamp recycler. You should contact the landfill operator for permission before disposal. The landfill operator can refuse to accept the waste. The landfill may require a special waste disposal request before accepting the material.

Lamps Sent for Recycling

Businesses in Missouri may send their **unbroken** lamps to a recycler in Missouri that has resource recovery certification from Department of Natural Resources or to an out-of-state recycler. If unbroken lamps are sent for recycling, you do not need to use a licensed hazardous waste transporter in Missouri. You may use a hazardous waste manifest or other shipping papers to record and track your shipments of unbroken lamps.

If you intend to send hazardous lamps to an out-of-state recycler, you should contact the environmental agencies in the states through which the lamps will travel for their state requirements. Other states may require use of a licensed hazardous waste transporter and a manifest for shipments to a recycler even though Missouri does not.

Hazardous Lamps

Your fluorescent bulbs are subject to hazardous waste regulations if:

- They are broken, or
- They are identified as hazardous **and** are sent to a facility for treatment, storage or disposal. See the *Hazardous Waste* guide sheet, for more information.

There are two ways to determine if lamps are hazardous.

1. Test the waste. The test for determining the toxicity of fluorescent lamps is the toxicity characteristic leaching procedure (TCLP). If the level of any metal is at or above the acceptable level, the lamps are "hazardous waste." Acceptable levels are published in the *40 Code of Federal Regulations 261.24* as follows:
 - Mercury - 0.2 milligrams per liter (mg/l)
 - Cadmium - 1 mg/l
 - Lead - 5 mg/l
2. Apply knowledge of the hazardous characteristic. Data from lamp manufacturers show that traditional fluorescent lamps are likely to be hazardous waste. If you wish, you may assume the lamps are hazardous to avoid the costs of testing. However, your disposal firm may require test results before taking your lamps.

The hazardous waste regulations you must meet depend on how much waste you generate. It may be helpful to know that 350 of the standard four-foot long lamps weigh about 220 pounds. If you have over 220 pounds of hazardous waste in a month or at any one time you are regulated as a small quantity generator. See the *Hazardous Waste* guide sheet for more information.

Low-mercury lamps are available. Ask your lamp supplier for information.

Remember

- Fluorescent bulbs may be hazardous waste.
- Unbroken fluorescent bulbs can be sent to a bulb recycler.
- Do not break fluorescent bulbs.

Pollution Prevention Options

Preventing pollution instead of treating or disposing of it can save money, protect the environment and reduce risk to people. Here are some suggestions:

- ✓ Purchase low-mercury bulbs.
- ✓ Protect bulbs from breakage.
- ✓ Recycle bulbs.

For More Information

Missouri Department of Natural Resources
Environmental Assistance Office
P.O. Box 176
Jefferson City, MO 65102-0176
1-800-361-4827 or (573) 526-6627
www.dnr.mo.gov/oac/env_assistance.htm



Fountain Solution

Some fountain solutions contain chemicals that cause air pollution or may be hazardous waste. It is important to know what is in your fountain solution and to comply with any environmental requirements.

The main chemicals of concern in fountain solutions are volatile organic compounds (VOCs), particularly isopropyl alcohol (IPA). These chemicals cause air pollution. Your material safety data sheet (MSDS) should list the percentage of IPA and the total percentage of VOCs in your fountain solution. If it does not, contact the manufacturer to get this information.

Reducing the VOCs from your fountain solution will help you protect employee health, the community and the environment.

Some printers use IPA in concentrations as high as 35 percent while most use concentrations ranging from 15-20 percent. Good quality printing can often be done using fountain solutions with less than 5 percent IPA. Use fountain solutions with the lowest IPA and VOC content possible. Ask your supplier to help you find substitutes. You will need to give the supplier information regarding your press, type of paper, ink, blanket wash, anti-foaming agents and the fountain solution you are currently using.

Keeping a press log with information on the new chemicals, press settings, ink and paper types will help you evaluate how well the alcohol substitutes are working for you.

Starting with the least amount recommended, measure and record the pH and conductivity. Print with this mixture and record your findings. If too much fountain solution is needed, adjust the mixture and again record findings. Do this until you get the desired quality.

Air Quality Issues

Businesses capable of emitting a large amount of VOCs or other air pollutants may be required to control their air emissions, report on their air emissions and get permits.

Some geographic areas may have special rules for record keeping and VOC use because of local air quality concerns. Places with high levels of air pollution may be classified as nonattainment areas. The St. Louis metropolitan area is a non-attainment area because of ground level ozone, or smog. Kansas City is an ozone maintenance area and has a lithographic printing regulation. Contact your local air pollution control agency for information on local requirements. See the *Air Quality* guide sheet for a list of local contacts.

Managing Waste Fountain Solution

Some fountain solutions are hazardous waste. Your solvent supplier should be able to tell you if your solution is a hazardous waste, or you can check with the manufacturer. If you cannot find out from these sources, contact the Missouri Department of Natural Resources or another environmental professional for help. You will need the material safety data sheet (MSDS). Your fountain solution may also be hazardous waste because of contamination by inks or cleaning solvents. See the *Hazardous Waste* guide sheet for more information.

The *Hazardous Waste Management* guide sheet has information on rules for managing hazardous waste. Be sure your waste is going to a place that is legally allowed to take it. For a list of hazardous waste facilities in Missouri or a list of resource recovery facilities (recyclers), contact Department of Natural Resources at 1-800-361-4827.

Some printers put fountain solution down the drain. If your shop is connected to a sewer system leading to a wastewater treatment plant, check with the plant to see if that is okay. Some chemicals can harm the treatment plant and must be treated before you put them down the drain.

Do not put fountain solution or any industrial waste down your drain if the drain does not lead to a wastewater treatment plant. See the *Wastewater* guide sheet for more information.

Never pour fountain solution or any other waste onto the ground. Doing that can seriously harm the environment and you. Also, there are serious penalties for illegally disposing of waste.

Remember

- Isopropyl alcohol is a VOC and can cause air pollution. If you use it, find out if you need a permit. If you have a permit, be sure you don't exceed your limits
- Your fountain solution may be hazardous waste. Find out if it is and manage it properly.
- Never pour any waste onto the ground. Never pour any chemicals down the drain unless you have permission from the wastewater plant.

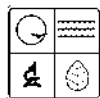
Pollution Prevention Options

Preventing pollution can save money, protect the environment and reduce risk to people. Here are some suggestions:

- ✓ Use the lowest isopropyl alcohol content possible, or use alcohol substitutes.
- ✓ Using a chiller can reduce evaporation of your fountain solution and improve print quality.
- ✓ Consider using filter units and an automatic mixing system.

For More Information

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Hazardous Waste

Many printers generate hazardous waste. It is very important that you find out if your wastes are hazardous and that you follow the law when managing the wastes.

What is a Hazardous Waste?

A waste is a material that you no longer use and will discard. It can be a solid, liquid or gas. A waste is hazardous if it has properties that could be dangerous to human health and the environment. Solvents, screen reclamation chemicals and inks are examples of wastes that could be hazardous.

It is **your** responsibility to find out if your waste is hazardous. A waste is hazardous if:

- It is listed as a hazardous waste in the federal regulations, or
- It exhibits a hazardous characteristic, or
- It is a hazardous waste by Missouri law, or
- It is a mixture of a listed hazardous waste and any other waste.

Listed Hazardous Waste

The federal government publishes lists of hazardous wastes. There are four different lists: The F list, the K list, the P list and the U list. Wastes that are on the P list are called "acutely hazardous" and are regulated more strictly than the other types.

Characteristic Hazardous Waste

Some wastes that are not on the lists may still be regulated hazardous wastes because they have characteristics that make them hazardous. There are four characteristics:

- **Ignitable** – A waste with a flashpoint of less than 140° F, or solids that catch fire easily and burn so rapidly they create a hazard. Some solvents and blanket washes are ignitable.
- **Corrosive** – A waste with a pH less than or equal to 2.0 or greater than or equal to 12.5. An example is some haze removers.
- **Reactive** – Wastes that are normally unstable, react violently with water, can explode or release poisonous gases.
- **Toxic** – Wastes with defined concentrations of certain organic chemicals, heavy metals or pesticides when tested by the toxicity characteristic leaching procedure (TCLP). Federal regulations contain a list of toxic chemicals. Some inks contain heavy metals.

Missouri-specific Hazardous Waste

An individual state can regulate wastes as hazardous even if they are not on the federal list. For example, in Missouri certain dioxin wastes are regulated at smaller quantities than in the federal rules.

Mixed Waste

If you mix any waste with a waste that is on the F, P, K or U list, all of it is hazardous, even if there is only a very small amount of listed hazardous waste in the mixture.

Is Your Waste Hazardous?

To find out if your waste is hazardous, check to see if it is on the lists of hazardous wastes or if it is a hazardous waste in Missouri. If it is not, you need to find out if it exhibits one or more of the hazardous characteristics. Check the material safety data sheet (MSDS) or contact your supplier for information.

If you are unsure if your waste is hazardous, you will need to have it tested in a laboratory. Contact the Department of Natural Resources at 1-800-361-4827 for help with this.

Managing Hazardous Wastes

There are very specific requirements for managing hazardous waste from your business. The requirements you must meet depend on what and how much waste you generate. You need to know how much acutely hazardous waste (P-listed) and non-acute hazardous waste you generate each month. You also need to know how much of each of these types of waste you accumulate at any one time.

Use the following information to determine your generator status. See the *Hazardous Waste Management* guide sheet for more information on how to label, store and dispose of your hazardous waste.

What Type of Generator Are You?

There are three types of generators: large quantity generator (LQG), small quantity generator (SQG) and conditionally exempt small quantity generator (CESQG). Here are some general guidelines to help you decide what type of generator you are:

If you generate in one month or accumulate at any one time:

- More than 1 kg (2.2 pounds) of acutely hazardous waste, you are an LQG.
- 1,000 kg (2,200 pounds) or more of non-acute hazardous waste, you are an LQG.
- More than 100 kg (about 220 pounds), but less than 1,000 kg (2,200 pounds) of non-acute hazardous waste AND less than 1 kg of acutely hazardous waste, you are an SQG.
- No more than 100 kg (220 pounds) of non-acute hazardous waste AND less than 1 kg of acutely hazardous waste, you are a CESQG.
- In Missouri, anyone generating one gram or more of dioxin waste (2,3,7,8-tetrachlorodibenzo-p-dioxin) is an LQG.

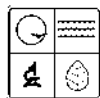
If you are a SQG or LQG you must register with Department for Natural Resources and get a generator identification number. You also must follow regulations on storage, transport, record keeping and reporting. Contact the Department for Natural Resources for more information.

Remember

- You are responsible for determining if your waste is hazardous.
- You will need to register as a hazardous waste generator if you generate in a month or accumulate at any one time more than:
 - 1 kg (2.2 lbs.) of acutely hazardous waste or
 - 100 kg (220 lbs.) of non-acutely hazardous waste or
 - 1 gram (0.0022 lbs.) of dioxin waste.

For More Information

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Hazardous Waste Management

If you generate hazardous waste – and most lithographers do – there are requirements for how you manage that waste. The rules you must follow depend on how much waste you generate. This guide describes the main requirements. For information on how to decide if your waste is hazardous, see the *Hazardous Waste* guide sheet.

This list does not include every requirement for every generator. It is general guidance for large and small quantity generators.

Containers

- Hazardous waste containers must be in good condition. If a container leaks, transfer waste to a new container.
- Do not let rainwater accumulate on top of the container.
- Keep containers closed and use self-closing funnels when adding waste.
- Use containers that are compatible with the waste. For example, use HDPE (high-density polyethylene) plastic containers for corrosive wastes.
- Never place incompatible wastes, such as wastes that react with each other (acids and bases) in the same container.

Storage

- Keep aisle space between container rows to allow inspection for leaks and damage.
- Store ignitable and reactive wastes at least 50 feet from property boundaries.
- Store containers of incompatible wastes in separate areas.
- There are limits on how long you store your waste.

Labels

- Label every container with the type of waste and whether it is hazardous or non-hazardous.
- Include EPA hazardous waste numbers or Missouri waste code numbers.
- Include the date waste was first placed in the container and date when it was first placed into storage.
- Include your business' name and address.
- Use the following words on labels for hazardous wastes:

HAZARDOUS WASTE

FEDERAL LAW PROHIBITS IMPROPER DISPOSAL

If found, please contact the nearest police or public safety authority or the U.S. EPA

(Your business's name and address and manifest document number.)

Transport and Disposal

- Make sure your hazardous waste transporter has an EPA identification number and a Missouri Hazardous Waste Transporter License.
- Make sure the place receiving your waste has EPA identification numbers and the necessary state permits.
- Use manifests for hazardous wastes shipped off-site.

Inspections and Record keeping

- Inspect containers at least once a week and keep a written log of inspections.
- Keep training and inspection records, manifests, shipping receipts and records of lab tests for three years.
- Keep land disposal restriction forms for five years.

Training

- Train all employees to identify, reduce and properly handle wastes.
- Train new employees before they handle hazardous waste.

Notify Missouri Department of Natural Resources

- If your business is a small or large quantity generator, register as a generator with Department of Natural Resources to get an EPA and Missouri generator identification number.

Emergency Preparedness

- Notify police departments, fire departments and local hospitals. They need to know what hazardous wastes are on your property.
- Designate an emergency coordinator. This person must know what to do in case of a fire, spill or other emergency and must be on the premises or on call 24 hours a day.

Contingency Plans

Large quantity generators must have a written plan that includes the following. Having a contingency plan is a good idea even if you are not a large quantity generator.

- Response arrangements with police, fire, hospitals and emergency response contractors.
- Emergency coordinator's address and phone number(s).
- On-site emergency equipment descriptions and locations.
- Evacuation plan and routes, including a site diagram.

Post Emergency Information

Small quantity generators must post the following information near every telephone:

- Fire department phone number.
- Emergency coordinator's name and phone number.
- Fire alarm and extinguisher locations.
- Locations of spill control materials.

Remember

- You must decide if your waste is hazardous and manage it correctly.
- Find ways to eliminate or reduce hazardous wastes. This will reduce the number of requirements you must meet. See the pollution prevention suggestions on other guide sheets, particularly those dealing with inks and solvents.

For More Information

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Ink Waste

Some inks contain chemicals that can harm people and the environment if not properly managed. Solvents found in some inks can cause air pollution and may be hazardous waste when disposed. Also, some pigments contain metals that can cause the ink to be hazardous waste. It is important that you properly manage your inks to protect employees, the community and the environment.

Whether a specific ink is hazardous waste depends on the amount and type of heavy metals, solvents and other chemicals it contains. Hazardous solvents commonly found in inks include ethanol, isopropanol, ethylene glycol, xylene, toluene, cyclo-hexanone and petroleum distillates.

These solvents are also considered volatile organic compounds (VOCs).

VOCs are chemicals that can cause indoor health problems such as lung irritation and outdoor problems such as smog. If you use solvent-based inks, you may need a to notify the Missouri Department of Natural Resources about your air emissions. See the *Air Quality* guide sheet and the *VOCs and HAPs* guide sheet for more information.

Pigments may contain lead, chromium, silver, cadmium and barium, causing the waste ink to be hazardous waste depending on the amount of heavy metals in it.

The material safety data sheets (MSDS) for inks should contain information on what chemicals are in them, including the solvents, metals and amount of VOCs. Your MSDS may not contain enough information for you to decide if your inks are hazardous waste or regulated air pollutants. Your supplier should be able to provide you with this information.

If you cannot find out from these sources, contact the Department of Natural Resources or another environmental professional for help. You will need the MSDS listing the chemicals in your ink.

If your ink is a regulated hazardous waste, it is important that you manage the waste properly. The following guide sheets have information to help you:

Hazardous Waste
Hazardous Waste Management
Solvents
Solvent Disposal
Solvent Recycling
Solvent Reuse

If your waste ink is not a hazardous waste, check the MSDS for recommended disposal methods. Do not put liquids in your trash. Landfills in Missouri cannot accept liquid waste. You can dry out your waste ink by mixing it with an absorbent material such as kitty litter.

If the drains at your shop lead to a sewer and wastewater treatment plant, you may be able to pour water-based inks down the drain. Contact the wastewater plant to ask if they can accept the water-based ink. **Do not** put ink, solvent or other chemicals down the drain unless the wastewater plant has approved. **Do not** put solvent or any industrial waste down your drain if the drain does not lead to a wastewater treatment plant. See the *Wastewater* guide sheet, for more information.

Never pour solvent or any other waste onto the ground. Doing that can seriously harm the environment and you. Also, there are serious penalties for illegally disposing of waste.

Remember

- Inks may be hazardous waste when discarded. Check your MSDS or ask your supplier. See the *Hazardous Waste* guide sheet for more information.
- Inks may contain solvents that are regulated air pollutants. Check your MSDS or ask your supplier. See the *Air Quality* guide sheet for more information.
- There are many non-hazardous inks on the market. Ask your supplier to help you find inks that are not hazardous wastes and that contain little or no VOCs.
- Find ways to reduce the amount of ink you use. Reuse waste ink. Work with your supplier to have inks reblended.

Pollution Prevention Options

Preventing pollution instead of treating or disposing of it can save money, protect the environment and reduce risk to people. Here are some suggestions:

- ✓ Ask your vendor for non-hazardous inks.
- ✓ Work with vendors who can reblend old or waste inks.
- ✓ Buy only as much ink as will be needed in the near future. Use up old ink before ordering more.
- ✓ Use a scraper or spatula to remove as much ink as possible from containers and stir sticks.
- ✓ Tell customers which inks are environmentally preferable.

For More Information

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Parts Washers

Lithographic printers sometimes use parts washers for cleaning parts and tools. Most parts washers use either solvent or water-based cleaners. Depending on the cleaner used and the items being cleaned, the waste from parts washers may be hazardous.

Solvent Washers

Many people use solvents for cleaning parts. Some solvents evaporate readily and can cause air pollution problems. For this reason the use of certain solvents is restricted in some areas, such as St. Louis and Kansas City. Check with your local air pollution control office or the Missouri Department of Natural Resources for any special requirements for your solvents.

Some solvents used in parts washers are hazardous waste when disposed. If you do not know whether your used solvent is a hazardous waste, ask your supplier or manufacturer. The material safety data sheet (MSDS) may have this information. It will be your responsibility to make sure the solvent is handled properly and the paperwork is filled out correctly.

Even if the solvent is not hazardous waste, the used solvent can be due to contamination from the parts you clean. Your supplier may be able to provide information on typical contaminants, or you may need to have the waste solvent tested. See the *Hazardous Waste* guide sheet for more information.

Some businesses use solvent-distillation units, often called stills. These remove contaminants so the solvent can be recycled and reused. If you recycle a hazardous waste solvent on-site you must notify the department. If you recycle more than 2,200 pounds of hazardous waste in a month, you must get a resource recovery certification from the department. The residues from these units may be hazardous waste.

Water-based Washers

Many water-based parts washers are available. Typically these are closed units that use hot water and detergents with rust inhibitors. They work very much like home dishwashers. The units are often designed to filter oil and impurities from the water during operation.

If you have or are thinking of using this type of washer, you must still be concerned about hazardous waste issues. Contact the supplier to learn if the detergent is regulated as a hazardous waste. As with solvent units, the contamination from the parts you are cleaning could cause the waste to be hazardous. You may need to have the wastewater, filters or sludges tested to find out if they are hazardous.

If you plan to put wastewater from your parts washer down the drain, contact your sewer system personnel to make sure it is okay with them. If your wastewater is treated by an on-site system, such as a lagoon or septic tank, you cannot put wastewater from your business operations down the drain. You will need to contain your wastewater and dispose of it at a facility able to accept it. For this reason, it may be more costly to use a water-based parts cleaning system if your business is on a septic system. See the *Wastewater* guide sheet for more information.

Do not let untreated wastewater drain out on the ground or to any body of water.

Remember

- It is your responsibility to make sure the waste solvent is handled properly.
- Solvents or detergents used in parts washers may be regulated as hazardous waste.
- Contaminants from dirty parts can cause waste solvent or wastewater to be hazardous.
- You must notify the Department of Natural Resources if you recycle hazardous waste on-site. If you recycle over 2,200 pounds in a month, you must get a resource recovery certification.
- Check with your sewer plant to see if it is okay to pour wastewater from your parts cleaner down the drain.
- Never drain untreated wastewater onto the ground, into storm sewers or into any body of water.

Pollution Prevention Options

Preventing pollution instead of treating or disposing of it can save money, protect the environment and reduce risk to people. Here are some suggestions:

- ✓ Close the lid on your parts washer and turn off the spray nozzle when not in use. This will decrease evaporation of solvent.
- ✓ Consider a solvent distillation unit (still). These units can extend the life of the solvent, saving raw material expense and hazardous waste disposal costs.
- ✓ Use slightly dirty solvent for initial rinsing of parts and clean solvent for final cleaning.
- ✓ Maintain parts washers. Check to make sure seals are tight and there are no leaks.

For More Information

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Plate Disposal

When your lithographic plates are too worn to use again or are no longer needed, they typically can be recycled or discarded with your regular trash.

There are several good sources of information on recyclers. To find recyclers in your area:

- Check the yellow pages of the phone directory.
- Contact your community's solid waste or public works office.
- Check with other businesses in your area to ask if they know of recyclers.
- Call your newspaper. In some areas, the newspaper publishes lists of recyclers.
- Ask your trade association. See the *Contact List* guide sheet for a listing of trade associations and other contacts.

If you store plates before recycling, store them apart from other recyclable materials.

Keeping materials separated makes recycling easier and can sometimes increase the price the recycler pays or reduce the price the recycler charges.

If you plan to dispose of your plates, contact your landfill and waste hauler to see if they have any special handling requirements.

Never burn waste from your business.

Be sure all of your waste goes to a place legally able to accept it. Never try to dispose of waste on your own property. Doing that is bad for the environment and can make it difficult to sell your property. There are also serious penalties for illegal waste disposal.

Remember

- Be sure all of your waste goes to a place legally able to accept it.
- **Do not** burn wastes from your business.

For More Information

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Press Cleaning

One of the largest sources of air pollution in lithographic print shops is from chemicals used in press cleaning, including blanket washes. Many of these products contain volatile organic compounds (VOCs). These chemicals can harm people and cause air pollution. To protect human health and the environment, regulations limit the amount of VOCs or other air pollutants businesses can release. The *Air Quality* and *VOCs and HAPs* guide sheets have more information.

Many press cleaning chemicals are also regulated as hazardous waste. This can affect how you manage any waste chemicals and how you manage the shop towels, or wipes, used to clean the press. See the *Shop Towels* and *Hazardous Waste* guide sheets for more information.

To find out if your cleaning products contain VOCs, check your material safety data sheet (MSDS). The MSDS may also have information on whether the chemical is a hazardous waste. If you can not find this information on the MSDS, contact your supplier or manufacturer.

Using substitute blanket washes and other cleaning chemicals can help protect workers, the community and the environment. Although substitutes may cost more per gallon than traditional products, printers often find they use less. Some companies reduce blanket wash use by as much as 80 percent. Other costs to keep in mind are the costs of complying with environmental and safety regulations, including hazardous waste disposal costs. Substitutes that seem more expensive may actually cost your business less than high-VOC chemicals.

Even a small reduction in the VOC content of your cleaners will reduce air emissions. There are substitute products with very low percentages of VOCs, including vegetable esters and terpenes.

Work with your supplier to find low-VOC, non-hazardous products. Be sure to get information on how to use the material properly. Substitute blanket washes will not work the same as traditional washes. You will need to take the time to find out which works best in your shop. The following tips are based on information developed by the U. S. Environmental Protection Agency (EPA) and the Printing Trade Associations.

- Oily films may be left behind by substitutes. Experiment to see if this causes a problem. If it does, use a water-dampened wipe to remove the oil film.
- Keep in mind that low-VOC substitutes take longer to dry than high-VOC cleaners. If this is a problem, use a clean, dry wipe to wipe off any dampness.
- Many printers prefer to use only one product to clean the press. Check with your supplier find out if the substitute you are considering is compatible with all parts of your press.

- Some substitutes are thicker than traditional washes and may not absorb as quickly into shop wipes. Keep a supply of shop wipes and wash mixed together in a covered container. When you need a wipe, get one from this container, wringing out excess wash back into the container.
- Substitute cleaners don't work the same way as traditional cleaners. You may need to let the wash set on the press for a short time after applying before you wipe it off.

Remember

- Cleaning chemicals, including blanket wash, can be hazardous waste. They can also be regulated air pollutants. Find out how your cleaning chemicals are regulated.
- Use products with the least hazardous components.
- See these guide sheets for more information:
 - Air Quality*
 - Hazardous Waste*
 - Solvents*
- Reduce pollution and protect worker health by using low-VOC, HAP-free chemicals.

Pollution Prevention Options

Preventing pollution instead of treating or disposing of it can save money, protect the environment and reduce risk to people. Here are some suggestions:

- ✓ Keep cleaners and solvent-soaked rags in covered containers.
- ✓ Do not pour cleaning products onto the press. Instead, put the product on a towel or wipe, then wipe off the part to be cleaned.
- ✓ Train staff about environmental risks and costs. Ask them for suggestions on ways to reduce waste and pollution. Employees can be the best source of pollution prevention ideas.

For More Information

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Shop Towels

Discarded shop towels or rags, either cloth or paper, may be contaminated with hazardous wastes. If they are, the towels or rags may be hazardous waste.

Listed hazardous wastes include solvents such as methyl ethyl ketone, toluene, xylene and others. A waste can also be hazardous if it is toxic, ignitable, reactive or corrosive. This type of waste is called a characteristic hazardous waste. See the *Hazardous Waste* guide sheet for more information on what wastes are hazardous.

Any waste that is mixed with a listed hazardous waste becomes a hazardous waste. Towels with a listed hazardous waste on them become hazardous waste themselves when discarded. The towels could also be characteristic hazardous waste. Often solvent-soaked towels can burst into flames, which means they are regulated as ignitable hazardous waste.

The best way to deal with this issue is to prevent the problem. If you use nonhazardous cleaning solvents, the solvent will not cause the towel to become hazardous waste.

If used towels or rags are laundered and reused, they are not regulated as a solid waste or as a hazardous waste. You should tell your laundry what kind of chemicals are on the shop towels and make sure they can handle that type of material.

If you wash your own shop towels, be sure to check with your wastewater treatment plant to find out if they can accept the wastewater discharge you are putting down the drain. You may need to pre-treat your wastewater. Do not launder contaminated shop towels if the wastewater does not go to a treatment plant.

Do not launder towels or rags used to clean up spills of hazardous waste. If you use shop towels to clean up spills of listed hazardous waste, the shop towels are hazardous waste and must be disposed of at a permitted hazardous waste treatment, storage or disposal facility.

If you plan to throw away dirty shop towels or rags, you need to find out if they are hazardous waste. If the shop towels are hazardous, you must comply with the regulations for management, storage, transport and disposal of hazardous waste.

If your used towels are non-hazardous, you may send them to a sanitary landfill. Landfills cannot accept liquids, so be sure to collect and use any liquid from your shop towels. Remember that oily or solvent-soaked towels can catch fire easily. Store them safely. Some people spray the rags with water to prevent fires.

Remember

- Shop towels used to clean up spills of listed hazardous waste must be managed as hazardous waste.
- Shop towels contaminated with listed hazardous waste are hazardous waste.

- If dirty shop towels are laundered and reused, they are not waste. Let the laundry know what type of solvents or other material is on the dirty towels.
- Do not wash your dirty shop towels unless the wastewater goes to a wastewater treatment plant. Check with staff at the treatment plant to be sure it can handle the wastewater.
- If you are throwing away contaminated shop towels, you must find out if they are hazardous waste and follow the regulations that apply. See the *Hazardous Waste* guide sheet.

Pollution Prevention Options

Preventing pollution instead of treating or disposing of it can save money, protect the environment and reduce risk to people. Here are some suggestions:

- ✓ Use non-hazardous cleaners and solvents.
- ✓ Do not use shop towels to clean up spills of hazardous materials. Use drip pans to prevent spills and appropriate absorbents for cleanup.
- ✓ Use the least amount of solvent needed.
- ✓ Collect and recycle solvents from contaminated shop towels. You can use a wringer, centrifuge or similar device to remove the liquid. Some companies use screen-bottom drums for their used shop towels. Reuse or market the collected solvents if possible.

For More Information

Missouri Department of Natural Resources
Environmental Assistance Office
P.O. Box 176
Jefferson City, MO 65102-0176
1-800-361-4827 or (573) 526-6627
www.dnr.mo.gov/oac/env_assistance.htm



Solvents

Waste solvents used in cleaning make up a large part of the hazardous wastes from lithographic printing. You can help protect the environment, protect workers and save money by reducing the amount of solvent you use, reusing or recycling your solvent and using the least hazardous solvent that will do the job.

Air Pollution From Solvents

Many solvents contain volatile organic compounds (VOCs). These are chemicals that get into the air and can harm people and the environment. The material safety data sheet (MSDS) will have information on the amount of VOCs in the products you buy. Always try to use the material with the lowest percentage of VOCs possible.

Missouri has rules to protect air quality. The types of rules that apply to your shop depend on the type and quantity of inks, blanket wash and solvents you use, as well as the size of your operation. See the *Air Quality* and the *VOCs and HAPs* guide sheets for more information.

Waste Solvent

Many waste solvents are hazardous wastes. Some used solvents and still bottoms are on a list of hazardous wastes called the F list. Some unused solvents are on the U list. Common hazardous waste solvents include trichloroethylene, tetrachloroethylene (perc), methylene chloride, xylene, acetone, methyl ethyl ketone, toluene and others.

Some used solvents are hazardous because they are ignitable, toxic, reactive or corrosive. If the waste solvent has a flash point of less than 140° F it is an ignitable hazardous waste. The flash point is the temperature at which the solvent will catch on fire. If the pH is 12.5 or higher or if it is 2 or lower, the solvent is hazardous waste.

Waste solvent should be reused, recycled on-site, recycled off-site or, as a last resort, disposed of as a hazardous waste. See these guide sheets for more information:

Hazardous Waste
Hazardous Waste Management
Solvent Disposal
Solvent Recycling
Solvent Reuse

Reducing Solvent Waste

Solvents can be expensive to purchase and to dispose of. It makes good sense to try to reduce the amount of solvent you use. Often, the solvent that you use can be reused or recycled, which means you can purchase less new solvent. When you reduce the amount of solvent used, you save money and protect the environment.

Here are some ideas for reducing solvent use at your shop:

- Keep solvent containers, parts washers and solvent sinks closed. Any solvent that evaporates at your shop is solvent you paid for and can not use. Some people estimate that as much as 40 percent of solvents are lost due to evaporation, equipment leaks, spills or inappropriate use.
- Set up and follow a maintenance schedule for equipment. This can prevent leaks.
- Check regularly for leaks, drips and spills. Repair leaks and clean up spills right away.
- Schedule jobs to reduce the need to clean between jobs.
- Use slightly dirty solvent for the first rinse of equipment.
- Use a scraper or spatula to remove ink from stir sticks and containers.
- Keep solvent containers, parts washers and solvent sinks closed. This is so important the list begins and ends with it.

Remember

- Your solvent may be hazardous waste.
- Use the least hazardous solvent that will do the job.
- Ask your supplier if non-hazardous solvents are available.
- Solvent that evaporates is solvent you paid for and can not use. Keep containers tightly closed and in good condition.
- Use the solvent with the lowest VOC content possible.

For More Information

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Solvent Disposal

Solvent is expensive to buy and to discard. It makes sense to try to reduce the amount of solvent you use. Reuse or recycle your used solvent. Only as a last resort should you dispose of solvent. See these guide sheets for more information:

Solvent

Solvent Recycling

Solvent Reuse

Many waste solvents are hazardous wastes. It is very important that you manage your hazardous wastes according to the regulations. The *Hazardous Waste* and *Hazardous Waste Management* guide sheets have more information.

To properly manage your waste solvent you need to:

- Find out if your waste is hazardous.
- Figure out how much hazardous waste you generate.
- Learn what rules apply to you based on how much waste you generate.
- Use the services of a waste transporter and disposal or recycling company legally able to take your waste.

Is Your Waste Hazardous?

Some waste solvents are on a list from the federal government of wastes regulated as hazardous. These are called "listed" hazardous wastes. Commonly used solvents on this list include trichloroethylene, methylene chloride, xylene, acetone, methyl ethyl ketone (MEK), toluene and others.

Some solvents are characteristic hazardous wastes, which means they are ignitable, toxic, reactive or corrosive. If the waste has a flash point of less than 140° F, it is an ignitable hazardous waste. The flash point is the temperature at which the solvent will catch on fire. Corrosive hazardous waste has a pH of 2 or less or 12.5 or higher.

Your solvent supplier should be able to tell you if your solvent is a hazardous waste, or you can check with the manufacturer. If you cannot find out from these sources, contact the Missouri Department of Natural Resources or another environmental professional for help. You will need the material safety data sheet (MSDS).

If the solvent is not a hazardous waste, the ink or dirt in it may cause the used solvent to be a hazardous waste. If any contaminant in your used solvent is hazardous, your used solvent may be hazardous waste. Contact the Department of Natural Resources for more information on this.

If your waste solvent is a listed hazardous waste, anything it is mixed with is hazardous waste. For example, if you use listed solvent on your shop towels, the towels become hazardous waste when discarded.

Managing the Waste

You need to keep track of how much hazardous waste you generate. The rules you must follow depend on how much waste you generate. To learn more about this, see the *Hazardous Waste* guide sheet.

Always keep good records about your waste – how much and what you generate, who transports it and where it goes. In most cases, you will need to get a generator identification number from Department of Natural Resources and use a manifest when you ship the waste off-site. The company that transports your hazardous waste must have a Missouri Hazardous Waste Transporter License.

Be sure your waste is going to a place that is legally allowed to take it. For a list of hazardous waste facilities in Missouri or a list of resource recovery facilities (recyclers), contact the Department of Natural Resources at 1-800-361-4827.

For more information on managing your hazardous waste solvent, see the *Hazardous Waste Management* guide sheet.

If your waste solvent is not a hazardous waste, check the MSDS for recommended disposal methods. Do not put liquids in your trash. Landfills in Missouri cannot accept liquid waste.

If the drains at your shop lead to a sewer and wastewater treatment plant, you may be able to pour water-based solvents down the drain. Contact the wastewater plant to ask if they can accept the water-based solvent. **Do not** put solvent, paint or other chemicals down the drain unless the wastewater plant has approved. **Do not** put solvent or any industrial waste down your drain if the drain does not lead to a wastewater treatment plant. See the *Wastewater* guide sheet for more information.

Never pour solvent or any other waste onto the ground. Doing that can seriously harm the environment and you. Also, there are serious penalties for illegally disposing of waste.

Remember

- Find out if your waste solvent is a hazardous waste. Ask your supplier for non-hazardous solvents.
- Be sure anyone who takes your waste is legally able to do so.
- Never pour any waste onto the ground. Never pour any chemicals down the drain unless you have permission from the wastewater plant.

For More Information

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Environmental Assistance Office
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www.dnr.mo.gov/oac/env_assistance.htm



Solvent Recycling

Whether you recycle your solvent on-site or have someone pick it up for recycling elsewhere, recycling your used solvent helps protect the environment and can save money. You need to find out if your used solvent is regulated as hazardous waste. You can find information on how to do that in the *Hazardous Waste* guide sheet and the *Solvents* guide sheet.

This guide sheet deals with recycling hazardous waste solvent. If your used solvent is not hazardous waste, check with your recycling equipment vendor for information on managing wastewater and waste from the recycling unit. You can also call the Missouri Department of Natural Resources for help.

On-site Recycling

Most on-site recycling of solvent is done with a distillation unit called a still. Used solvent is put in the still and heated to the boiling point. The solvent vapor is then cooled, producing nearly pure solvent. There are also recycling units that filter the used solvent.

To figure the cost savings from on-site recycling, consider the cost of new solvent and the cost of off-site recycling. In general, shops that generate 50 gallons of waste solvent per month will get their money back on a small still in about a year.

You need to contact the Department of Natural Resources before you begin recycling your solvent on-site. For small amounts, you need to notify the Department of Natural Resources' Hazardous Waste Program, P.O. Box 176, Jefferson City, MO 65102. Send a letter that includes your name, the name and location of your facility, the wastes being recovered and the approximate quantity of waste recovered each year.

If you recycle more than 1,000 kilograms (2,200 pounds or about 260 gallons) on-site in a month, you must send an application to Department of Natural Resources for a resource recovery certification. The application form can be downloaded from the Internet at: www.dnr.mo.gov/oac/forms/780-1163.pdf or can be obtained by calling the department at 1-800-361-4827. There is a \$500 application fee. More information about resource recovery can be found in our technical bulletin, PUB002091, which is also available on the Internet at: www.dnr.mo.gov/oac/pub2091.pdf or by calling the department.

After the solvent is distilled, there will be some settled residue called still bottoms. This material may be hazardous waste. If your recycling unit filters used solvent, the used filters may also be hazardous waste. If the still bottoms and filters are hazardous, store them in a closed container labeled with the date you first put the waste in the container and the words "Hazardous Waste." All hazardous wastes from your solvent recycling must be properly handled and disposed. See the *Hazardous Waste Management* guide sheet, for more information.

Some recyclers have mobile recycling services. They bring equipment to your shop and recycle your solvents there. These businesses must have resource recovery certification in Missouri. If you use this type of service, ask the recycler to give you a copy of their approval letter from the Department of Natural Resources.

Off-site Recycling

You may choose to recycle waste solvents off-site with a commercial recycler. Some businesses will transport and recycle your solvent. Other recyclers offer a solvent tank maintenance service. They will come to your shop, remove the solvent and sludge from your tank and replace it with clean solvent. Solvent recycling companies in Missouri must also have resource recovery certification from the department.

If you send your waste solvent off-site, whether for recycling or disposal, you need to follow all hazardous waste requirements. The company that transports your waste solvent must have a Missouri hazardous waste transporter license. Other requirements depend on how much waste you generate. In most cases you will need to get a generator identification number from the department and use a manifest when you ship the waste off-site. Be sure you get a copy of the completed manifest.

In some cases, you can have a contract with your solvent recycler instead of using a hazardous waste manifest. Small quantity generators of hazardous waste can do this. See the *Hazardous Waste* guide sheet to learn if you are a small quantity generator. The agreement with your recycler must include the type of waste and frequency of shipments. The waste must be transported to the recycling facility and the recycled material brought back to you in the recycler's own vehicle.

Remember

- If you recycle your hazardous waste solvent, you need to notify the Department of Natural Resources. You may need a resource recovery certification.
- If someone else recycles your hazardous waste solvent, that person needs a resource recovery certification from the department.
- Still bottoms and filters from recycling solvent are often hazardous waste. Store them in closed, labeled containers before disposing of them with a facility legally able to accept hazardous waste.

For More Information

Missouri Department of Natural Resources
Environmental Assistance Office
P.O. Box 176
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www.dnr.mo.gov/oac/env_assistance.htm



Solvent Reuse

Many cleaning solvents and thinners are regulated as hazardous waste. They also may contain chemicals that can cause air pollution. For many printers, solvents are also a major expense. Reusing solvent can help protect the environment and save money.

Reusing Solvent

It can be easy and inexpensive to reuse your solvent. You can use the dirty solvent as a first rinse for dirty equipment. Another method is to settle out the solids in your used solvent. Put the used solvent in a container and leave it undisturbed until the solids settle out. Siphon off the liquid solvent with a drum pump. Filtering equipment is also available for used solvent. If you filter your solvent it is considered recycling and other rules may apply. See the *Solvent Recycling* guide sheet.

Eventually your solvent may be too dirty to reuse. When this happens, you should recycle it. Recycling, like reuse, saves money and helps protect the environment. Dispose of used solvent only as a last resort.

If you need to recycle or dispose of your used solvent, you must find out if it is hazardous waste and follow the requirements for managing the waste.

These guide sheets have more information:

Hazardous Waste

Hazardous Waste Management

Solvents

Solvent Disposal

Solvent Recycling

Permits for Reusing Solvent

You do not need a permit from the Missouri Department of Natural Resources if you simply allow solids to settle out of your used solvent at your shop. However, if you process your solvent in some way, hazardous waste rules may apply. Also, the material (sludge) that settles out may be hazardous waste.

Storing Used Solvent

If your used solvent is hazardous waste, you must store it according to hazardous waste rules even if you plan to reuse it. Store hazardous waste in a closed container labeled with the words "Hazardous Waste" and the date you first put waste in it. The length of time you can store the waste depends on how much waste you generate. See the *Hazardous Waste Management* guide sheet for more information.

Managing Sludge

Usually the sludge that settles out of used solvent is hazardous waste because it is ignitable or toxic or because the solvent is a listed hazardous waste.

If the sludge has a flash point of less than 140° F, it is ignitable hazardous waste. This means the waste will catch on fire at less than 140° F. If it contains toxic materials (usually metals like chromium or lead) over certain levels it is a toxic hazardous waste. Corrosive hazardous wastes have a pH of 12.5 or more or a pH of 2 or less.

If the solvent is on one of the lists from the federal government of materials regulated as hazardous waste, the sludge is a listed hazardous waste. Solvents on this list include trichlorethylene, tetrachloroethylene (perc), methylene chloride, xylene, acetone, methyl ethyl ketone (MEK), toluene and others.

The material safety data sheets (MSDS) for your solvents and inks should indicate the chemicals (such as toluene, etc.), the flash point, the pH and any toxic chemicals present in large quantities. You can check with your solvent vendor to find out if the solvent is hazardous waste. If it is, you can assume the sludge is hazardous. If the solvent is not hazardous, the sludge may still be hazardous because of contaminants in it.

If you do not know from your MSDS or some other authority that your sludge is non-hazardous, you will need to have it tested. A laboratory will need to measure the flash point and do a toxicity characteristic leaching procedure (TCLP).

There are many laboratories that will do these tests. Check your phone book, ask your vendor or contact your trade association for suggestions. The TCLP will only need to test for the chemicals that you expect to find in your waste.

If you know your waste is non-hazardous, either by your own knowledge or by testing, it can go in your regular trash if the waste is dry. Liquid non-hazardous waste can be dried out by mixing it with an absorbent like kitty litter. Always check with your local sanitary landfill officials to make sure they will accept this waste.

Remember

- Reduce the amount of solvent you use. Reuse your used solvent if possible. Recycling is the next best option.
- Sludge or filters that come from cleaning up your used solvent may be hazardous waste.

Pollution Prevention Options

Preventing pollution instead of treating or disposing of it can save money, protect the environment and reduce risk to people. To prevent pollution, look for ways to reduce the amount of solvent you use and ask your supplier for non-hazardous solvents and inks.

For More Information

Missouri Department of Natural Resources
Environmental Assistance Office
P.O. Box 176
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Storm Water Permits

Storm water runoff is part of the natural water cycle. However, outdoor storage of materials at your facility can add pollutants to rainwater and snowmelt. This polluted runoff, if not properly managed, can harm the environment, pollute creeks and lakes, and even contaminate drinking water.

The Federal Clean Water Act requires printing facilities to obtain a storm water discharge permit if they store products or material outside, exposed to storm water. In Missouri, the Department of Natural Resources issues Missouri State Operating Permits for storm water discharges.

You **must** apply for and obtain a Missouri State Operating Permit for storm water discharge if you own or operate a printing operation unless:

- You do not store materials outside exposed to storm water **or**
- The storm water from your site discharges to a combined sewer system (storm sewers and sanitary sewers drain in a common pipe to a wastewater treatment plant). Your local public works office can tell if your area has combined sewers.

Permits

General permits cover an entire industry, and are issued statewide for a period of five years. It is up to the individual facility operator to apply for the permit and pay the annual permit fee. The general permit will require you to develop a Storm Water Pollution Prevention Plan (SWPPP) for the site.

Site-specific permits may be written for businesses that store toxic materials, have large amounts of potential contaminants exposed to rainfall, or is one of only a few of its kind in the state. The department may require an owner to apply for a site-specific permit if it is needed to better protect water quality. This permit also has an annual fee.

Construction Projects

If your construction project will include the removal of vegetation, grading or excavating in an area one acre or larger, you will need a land disturbance permit. Land disturbance permits require the use of "best management practices" (BMPs) to minimize soil erosion from the site. BMPs include maintaining vegetation, temporary re-vegetation, silt fences, straw bales and sediment basins.

Remember

- If you own or operate a printing business in Missouri, you must have a Missouri State Operating Permit for your storm water discharge unless:
 - Your business is located in an area with combined sanitary and storm sewers, or
 - You do not store materials outside.

Pollution Prevention Options

Preventing pollution instead of treating or disposing of it can save money, protect the environment and reduce risk to people. Here are some suggestions:

- ✓ Store materials indoors if possible.
- ✓ Provide cover for materials stored outdoors
- ✓ Use interceptor dikes, swales or berms to direct storm water away from storage areas and areas that are prone to erosion.
- ✓ Re-vegetate disturbed or bare soil areas as soon as possible.
- ✓ Prevent spills.
- ✓ Maintain appropriate spill containment equipment and train employees how to use it.
- ✓ Visually inspect storm water in secondary containment structures prior to discharging water to grassy area. Use absorbents to remove any petroleum sheen on water prior to discharge.

For More Information

Missouri Department of Natural Resources
Environmental Assistance Office
P.O. Box 176
Jefferson City, MO 65102-0176
1-800-361-4827 or (573) 526-6627
www.dnr.mo.gov/oac/env_assistance.htm



VOCs and HAPs

Many inks and cleaning solvents used in the printing industry contain chemicals referred to as volatile organic compounds (VOCs) or hazardous air pollutants (HAPs).

VOCs are chemicals that evaporate into the air, then react with sunlight to form urban ozone (smog). Smog has serious health effects on the human respiratory system. Aside from coughing, headaches and nausea, smog can cause permanent lung damage.

HAPs are chemicals that are believed to cause cancer. Exposure to HAPs can also cause health effects such as birth defects, nerve disorders and other chronic and acute diseases. Many VOCs are also HAPs.

To protect public health and the environment, federal and state regulations limit the amount of VOCs or HAPs that can be released into the air by businesses such as printers. If you use chemicals that contain VOCs or HAPs, you may be subject to these regulations. See the guide sheet on *Air Quality* for more information.

VOCs are the primary air pollutant for which printers are regulated. Regulated air emissions come primarily from inks, cleanup solvents, fountain solutions, blanket washes, coatings and adhesives.

Check the material safety data sheet (MSDS) for each product your facility uses. This should list the VOCs or HAPs contained in the product. Your supplier should be able to help you find this information.

VOCs and HAPs pose a risk to employee health, public health and the environment. Many of these chemicals are also regulated as hazardous waste. They may also increase the risk of fire or explosion. Most printers find it is worthwhile to find ways to reduce the amount of these chemicals they use. Here are some suggestions for how you can reduce VOC and HAP use in your shop:

Some VOCs and HAPs Commonly Reported by Lithographic Printers*

Toluene
Ethylene glycol
Xylene (mixed isomers and ortho-xylene)
Glycol ethers
Methylene chloride
Methanol
Methyl ethyl ketone (MEK)
Perchloroethylene (perc)
Hydroquinone
Naphthalene
Acetic acid
Cobalt compounds
Caustic acid
Alkyl benzene
Solvent EB
Diethanolamine
Hexane
Cumene
Diethylene glycol monobutyl ether

*This is not a complete list of chemicals regulated as air pollutants. Contact the Missouri Department of Natural Resources for more information.

- Work with your vendors to find products that contain little or no air pollutants. Look for low-VOC, HAP-free inks, adhesives, blanket washes, coatings and other compounds. Do not forget about maintenance chemicals, paints and cleaning chemicals.
- Recycle waste inks. Waste inks of different colors can be blended together to make black ink. Look for ink vendors who will take your waste ink for reblending.
- Reclaim ink and solvents using an on-site distillation unit. See the guide sheet on *Solvent Recycling* for more information.
- Store VOC-containing materials in closed containers. Open containers allow VOCs to evaporate, causing air pollution and wasting money.
- Use closed containers for solvent at workstations.
- Add receiving funnels with automatically closing covers to storage containers to reduce spills and evaporation.
- Collect and store used rags in a self-sealing, flame-resistant can. If the rags are regulated hazardous waste, be sure the containers are properly labeled. See guide sheet on *Shop Towels*.
- Use the least amount of cleaner possible.
- Be sure your employees realize the risks and costs associated with VOCs and HAPs. Train them to use good housekeeping and pollution prevention practices such as those described here. Ask for their ideas on preventing pollution.

Remember

- VOCs are volatile organic compounds. HAPs are hazardous air pollutants. These chemicals can cause air pollution and pose a threat to human health and the environment.
- VOCs and HAPs are regulated air pollutants. They may also be regulated hazardous waste. Learn what chemicals you have and follow the rules that apply to them.
- Insist that your supplier help you find chemicals with little or no VOCs or HAPs. Look especially for low-VOC, HAP-free inks, cleaners, coatings, blanket wash and adhesives.

For More Information

Missouri Department of Natural Resources
 Environmental Assistance Office
 P.O. Box 176
 Jefferson City, MO 65102-0176
 1-800-361-4827 or (573) 526-6627
www.dnr.mo.gov/oac/env_assistance.htm



Wastewater

Printing businesses generate wastewater during daily operations. Sources of wastewater include imaging and pre-press operations, press cleaning and shop cleanup. This wastewater may contain metals (e.g. silver), solvents or other contaminants that are regulated pollutants.

Communities that provide sewer collection and wastewater treatment service may have pretreatment requirements for your wastewater discharge. Pretreatment is the reduction, elimination, or alteration of pollutants prior to discharge to a publicly owned wastewater system. Many communities restrict the quantity of silver that may be discharged to a drain connected to a publicly owned wastewater utility. If your business is connected to public sewers, contact the utility to determine discharge limits, prohibitions and permit requirements.

If public sewers and wastewater treatment are not available, you must carefully manage your shop's wastewater. You must manage hazardous wastewater by sending it to a permitted hazardous waste facility. See the *Hazardous Waste* guide sheet for more information.

Printing process wastewater is "industrial wastewater" and **cannot** be discharged to an on-site wastewater system regulated by the Missouri Department of Health and Senior Services (e.g. septic tank and drainfield).

You may discharge your "domestic wastewater" (water from restrooms or kitchen facilities) to a septic system.

Industrial wastewater **can** be treated on-site in a wastewater treatment plant permitted by the Missouri Department of Natural Resources. Another option is to collect your industrial wastewater and send it off-site to a department permitted wastewater treatment facility.

Do not send industrial wastewater to a septic system, doing so could contaminate the groundwater

Remember

- Treat your "industrial wastewater" at a wastewater treatment plant that is permitted by the Missouri Department of Natural Resources.
- If your business is served by a public wastewater utility, contact the utility to determine wastewater discharge limits and prohibitions. You may need to pre-treat your wastewater before it goes to the treatment facility.
- Do not send "industrial wastewater" to a septic system.
- Do not dispose of wastewater into storm drains, onto the ground, or into a body of water.

Pollution Prevention Options

Pollution prevention can save money, protect the environment and reduce risk to people. Waste management practices that reduce, reuse and recycle wastewater can greatly reduce your disposal costs and help protect sewer systems and treatment plants. Pollution prevention options for lithographic printers include management practices, equipment modifications and process modifications. Here are some suggestions:

- ✓ Recover silver from silver rich solutions prior to discharge or disposal. Silver is a non-renewable resource that has economic value. Public wastewater utilities restrict the amount of silver that can be discharged to sewers.
- ✓ Implement management practices that include preventive maintenance, process control, inventory control, spill response planning, good housekeeping, and safety and security measures.
- ✓ Consider possible equipment modifications such as adding squeegees on processors, implementing in-line silver recovery, and equipping processors with standby, counter-current or low-flow wash tanks.
- ✓ Consider possible process modifications including using “low replenishment chemicals,” reusing and regenerating process solutions, converting to a wash-less process, and using dry packaged chemicals and automated mixing to extend chemical shelf life.
- ✓ Consider using digital or direct-to-plate imaging. These technologies can increase efficiency and eliminate some pollutants.
- ✓ Minimize spills. Use absorbents to clean up minor fluid leaks and spills.
- ✓ Sweep floors before washing them.

Resources

“Code of Management Practice – Guide for Commercial Imaging: Recommendations on Technology, Equipment and Management Practices for Controlling Silver Discharges from Facilities that Process Photographic Materials” by the Silver Council.

Web page: www.silvercouncil.org/codes/Commercial_Manual.pdf.

Design for the Environment (DfE) Lithography Project:

www.epa.gov/dfe/pubs/lithography/lithpubs.pdf

For More Information

Missouri Department of Natural Resources

Environmental Assistance Office

P.O. Box 176

Jefferson City, MO 65102-0176

1-800-361-4827 or (573) 526-6627

www.dnr.mo.gov/oac/env_assistance.htm



Contact List

There are many organizations that can be of assistance to lithographic printers in Missouri. This list includes some of them.

Trade Associations

Printing Industries of St. Louis
The Joseph White Building
1790 S. Brentwood Blvd.
St. Louis, MO 63144-1312
Phone: (314) 962-6780
Fax: (314) 962-4490
www.pistl.org

Graphic Arts Technical Foundation
200 Deer Run Road
Sewickley, PA 15143-2600
Phone: (412) 741-6860
Fax: (412) 741-2311
www.gain.net

North American Graphic Arts Suppliers Assoc.
PO Box 934483
Margate, FL 33093
Phone: (954) 971-1383
Fax: (954) 971-4362
www.nagasa.org

Research and Engineering Council of the
Graphic Arts Industry
PO Box 1086
White Stone, VA 22578-1086
Phone: (804) 436-9922
Fax: (804) 436-9511
www.recouncil.org

Pollution Prevention Assistance Providers

Missouri Department of Natural Resources
Environmental Assistance Office
P.O. Box 176
Jefferson City, MO 65102
Phone: 1-800-361-4827 or (573) 526-6627
Fax: (573) 526-5808
www.dnr.mo.gov

National Association of Litho Clubs
PO Box 6190
Shallotte, NC 28470
Phone: (910) 575-0399
www.graphicarts.org

National Association for Printing Leadership
75 West Century Road
Paramus, NJ 07652-1408
Phone: (201) 634-9600
Fax: (201) 986-2976
www.napl.org

Technical Association of the Graphic Arts
68 Lomb Memorial Drive
Rochester, NY 14623-5604
Phone: (585) 475-7470
Fax: (585) 475-2250
www.taga.org

National Association of Printing Ink
Manufacturers
581 Main St., Fifth Floor
Woodbridge, NJ 07095
Phone: (732) 855-1525
Fax: (732) 855-1838
www.napim.org

Missouri Enterprise
Jimmy Story
800 University Drive, Suite 111
Rolla, MO 65401
Phone: 1-800-956-2682
Fax: (573) 341-6869
www.missourienterprise.org

Printers National Environmental Assistance Ctr
Gary Miller; Director
1 East Hazelwood Drive
Champagne, IL 61820
Phone: (217) 333-8942
www.pneac.org

Small Business Development Centers
There are local offices throughout Missouri.
To find the office nearest you, call
Phone: (573) 882-0344
Fax: (573) 884-4297

State and Federal Agencies

Missouri Department of Natural Resources
PO Box 176

Jefferson City, MO 65102

Air Pollution Control Program
(573) 751-4817

Hazardous Waste Program
(573) 751-3176

Land Reclamation Program
(573) 751-4041

Drinking Water Branch
(573) 751-5331

Soil & Water Conservation Program
(573) 751-4932

Solid Waste Management Program
(573) 751-5401

Water Pollution Branch
(573) 751-1300

Other Help Lines

CHEMTREC (Information on chemicals and chemical spills. Operated by the Chemical Manufacturers Association.) 1-800-262-8200

Emergency Planning & Community Right-to-Know 1-800-424-9346

EPA's Superfund/RCRA Hotline (information on solid waste, hazardous waste and Superfund)
1-800-424-9346

For More Information

Missouri Department of Natural Resources
Environmental Assistance Office

P.O. Box 176

Jefferson City, MO 65102-0176

1-800-361-4827 or (573) 526-6627

www.dnr.mo.gov/oac/env_assistance.htm

Office of Waste Management
University of Missouri Outreach & Extension
1221 W. Tracker Road
Nixa, MO 65714
Phone: (417) 725-9064
<http://outreach.missouri.edu/owm/>

Solid Waste Management Districts

The state is divided into 20 districts dealing with solid waste issues at the local level. These districts can provide information on local recycling and waste reduction options. Call the Department of Natural Resources at 1-800-361-4827 to get the phone number for your local district.

Small Business Assistance Center

University of Missouri – St. Louis

269 University Center

8001 Natural Bridge Road

St. Louis, MO 63121

Phone: 1-888-751-2863

www.missouribusiness.net

U.S. Environmental Protection Agency (EPA)
Region 7

Solid Waste and Pollution Prevention Branch

Gary Betram

726 Minnesota Ave.

Kansas City, KS 66101

Phone: (913) 551-7533

OSHA 1-800-321-OSHA (6742)

Pollution Prevention Information Clearinghouse
(202) 566-0799

Small Business Administration

1-800-827-5722

**Environmental Emergencies/Spill Hotline
call Missouri Department of Natural
Resources at (573) 634-2436 (24-hour hotline)**

UPDATE SERVICE FOR LITHOGRAPHIC PRINTING GUIDE

Please complete this form and send it to the address below to receive FREE UPDATES to "Preventing Pollution in Lithographic Printing." You will receive new and revised pages as they are developed. Please print clearly or type.

Name: _____

Facility: _____

Mailing Address: _____

City/State/Zip: _____

Please help us improve our service by answering these questions.

1. How did you learn of this document?

- It came in the mail
- Read about it in a departmental newsletter
- Heard about it from trade association
- Other _____

2. What topics would you like for us to add to the guide? _____

3. Did you know about the Environmental Assistance Office (EAO) before receiving this document? Yes No

4. Have you ever used EAO's environmental information or guidance services? Yes No

5. If yes, were you satisfied with the service provided? Yes No (please explain)

**Mail to: Missouri Department of Natural Resources
Environmental Assistance Office
P.O. Box 176
Jefferson City MO 65102-0176**

or fax to: (573) 526-5808

Questions about this guide or other services may be directed to EAO at 1-800-361-4827.

