Fw: CC Plume - EPA Document - Printing Industry Waste

Stephen Smith to: Debbie Jourdan 07/09/2012 10:32 AM

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Subject: CC Plume - EPA Document - Printing Industry Waste

Found this RCRA document to be very informative on printing industry wastes - particularly, beginning on Page 8. I've also consolidated the pertinent text into a Word document.

RCRA in Focus - Printing Industry Waste.pdfRCRA in Focus - Printing Industry Waste (Pertinent Text).docx

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RCRA IN FOCUS

PRINTING

- Regulatory Update
- Reducing Print Shop Wastes
- Hot Off the Press Resources

EPA

United States Environmental Protection Agency

Solid Waste and Emergency Response (5305W)

EPA530-K-97-007
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CONTENTS

FOR MORE INFORMATION CALL:

RCRA Hotline

U.S. Environmental Protection Agency
800 424-9346 or TDD 800 553-7672.
In the Washington, DC, area: 703 412-9810
or TDD 703 412-3323.

FOREWORD

Whether you are a screen printer, lithographer, flexographer, or other printer, your printing processes probably generate hazardous waste. That means you are regulated by the U.S. Environmental Protection Agency (EPA) under a federal law called the Resource Conservation and Recovery Act (RCRA). Under RCRA, you are required to follow certain procedures when generating, storing, transporting, treating, or disposing of hazardous waste. RCRA in Focus provides an overview of the federal regulations you are required to follow and the wastes that are likely to be hazardous in your business. It also provides federal recycling and pollution prevention options to help you decrease the amount of hazardous waste you generate.

Frequently Asked Questions About RCRA

What Is RCRA?

RCRA is a federal law that encourages environmentally sound methods for managing commercial and industrial waste as well as household and municipal waste. It regulates facilities that generate, transport, treat, store, or dispose of hazardous waste. The vast majority of printers are considered hazardous waste generators, rather than treatment, storage, and disposal facilities (TSDFs), which are subject to more rigorous regulations.

The term "RCRA" is often used interchangeably to refer to the law, the regulations, and EPA policy and guidance. The law describes the waste management program mandated by Congress that gave EPA authority to develop the RCRA program. EPA regulations carry out the Congressional intent by providing explicit, legally enforceable requirements for waste management. EPA guidance documents and policy directives clarify issues related to the implementation of the regulations.

All the RCRA hazardous waste regulations can be found in the Code of Federal Regulations (CFR), Title 40, Parts 260 to 279. The CFR can be purchased through the U.S. Government Printing Office (GPO).

Who Is Regulated?

Any printer that generates hazardous waste is potentially subject to RCRA. You must conduct tests required by the regulations or use your knowledge of and familiarity with the waste you generate to determine whether it is hazardous waste (as opposed to other types of waste). You might be subject to substantial civil and criminal penalties if you fail to properly or completely identify hazardous waste generated by your business.

What Is Hazardous Waste?

To be considered hazardous waste, a material first must be classified as a solid waste. EPA defines solid waste as garbage, refuse, sludge, or other discarded material (including solids, semisolids, liquids, and contained gaseous materials). If your waste is considered solid waste, you must then determine if it is hazardous waste. Wastes are defined as hazardous by EPA if they are specifically named on one of four lists of hazardous wastes (listed wastes), or if they exhibit one of four characteristics (characteristic wastes). Each type of RCRA hazardous waste is given a unique hazardous waste code using the letters D, F, K, P, or U and three digits (e.g., D001, F005, or P039). See pages 8 to 10 for additional information on printing waste codes.

Listed Wastes. Wastes are listed as hazardous because they are known to be harmful to human health and the environment when not managed properly, regardless of their concentrations. The lists include the following three types of waste:

- Non-Specific Source Wastes. These are material-specific wastes, such as solvents, generated by several different industries. Waste codes range from F001 to F039. Potential printing wastes include F001 to F005 (solvents).
- Specific Source Wastes. These are wastes from specifically identified industries. Waste codes range from K001 to K161.
- Discarded Commercial Chemical Products. Off-specification products, container residuals, spill residue runoff, or active ingredients that have spilled or are unused and that have been, or are intended to be, discarded. Examples of printing wastes include U019 (benzene), U056 (cyclohexane), and U220 (toluene). Waste codes range from P001 to P205 and U001 to U411.

STATE REQUIREMENTS

You may be regulated both by your state hazardous waste agency and EPA. RCRA allows states to receive legal permission, known as authorization, to implement the RCRA hazardous waste program.

You must always contact your state authority to determine which state requirements apply to your business. To operate a hazardous waste program, a state's regulations must be consistent with, and at least as stringent as, the federal program. Some states adopt more stringent requirements for facilities handling hazardous waste, which are considered part of the authorized program.

MORE QUESTIONS?

Call the RCRA Hotline at 800 424-9346 or TDD 800 553-7672 for additional information about RCRA rules and regulations. In the Washington, DC, area, call 703 412-9810 or TDD 703 412-3323.

Questions

Characteristic Wastes. Even if your waste does not appear on one of the hazardous waste lists, it still might be regulated as hazardous waste if it exhibits one or more of the following characteristics:

- Ignitability. Ignitable wastes create fires under certain conditions or are spontaneously combustible, and have a flash point less than 60 °C (140 °F). Examples include used solvents, which have a waste code of D001.
- Corrosivity. Corrosive wastes are acids or bases that are capable of corroding metal containers, such as storage tanks, drums, and barrels. Acid or alkaline process baths are a good example. The waste code for these materials is D002.
- Reactivity. Reactive wastes are unstable under "normal" conditions. They can cause explosions, toxic fumes, gases, or vapors when mixed with water. The waste code for these materials is D003.
- Toxicity. Toxic wastes are harmful or fatal when ingested or absorbed. When toxic wastes are disposed of on land, contaminated liquid may drain (leach) from the waste and pollute ground water. Toxicity is defined through a laboratory procedure called the Toxicity Characteristic Leaching Procedure. Printing wastes include D011 (silver), D019 (carbon tetrachloride), and D040 (trichloroethylene). Waste codes for toxic materials range from D004 to D039.

How Are Generators Regulated?

If your business generates hazardous waste, you must manage it according to regulations for your specific generator type. Hazardous waste generators are divided into three categories, according to how much they generate in a calendar month:

- Large Quantity Generators (LQGs). LQGs generate greater than or equal to 200 gallons of hazardous waste per month (equivalent to 1,000 kg or approximately 2,200 lb), or greater than 0.02 gallons (approximately 1 kg or 2.2 lb) of acutely hazardous waste per month.
- Small Quantity Generators (SQGs). SQGs generate more than 25 gallons (equivalent to 100 kg or approximately 220 lb), but less than 200 gallons (1,000 kg or 2,200 lb) of hazardous waste per month.
- Conditionally Exempt Small Quantity Generators (CESQGs). CESQGs generate less than 25 gallons of hazardous waste per month (or equal to 100 kg or 200 lb), and less than or equal to 0.02 gallons (1 kg or 2.2 lb) of acutely hazardous waste per month.

Some states do not recognize the CESQG class. Contact your state environmental agency to find out if the CESQG status is recognized. To find your appropriate state contact, call the RCRA Hotline at 800 424-9346.

Under the federal RCRA requirements, your generator status might change from one month to the next as the quantity of waste you generate changes. State requirements vary widely. You must comply with whichever standard is applicable for a given month. In many cases, small businesses that fall into different generator categories at different times choose to always satisfy the more stringent requirements (usually state requirements) to simplify compliance. Generators must "count" the amount of waste generated, which involves adding up the total weight of all quantities of characteristic and listed waste generated at a particular facility. Certain wastes, such as those that are reclaimed or recycled continuously on site, are not counted under the federal regulations.

AM I REGULATED BY RCRA OR SUPERFUND?

RCRA regulates the treatment, storage, and disposal of hazardous waste being generated now and in the future. Superfund was created to pay for the identification, inspection, investigation, ranking, and cleanup of abandoned or uncontrolled hazardous waste sites that people responsible for contamination are unable or unwilling to clean up. Call the RCRA Hotline for more information.

HOW IS USED OIL HANDLED?

RCRA contains special provisions for the management of used oil destined for recycling or reuse. These management standards apply to oil refined from crude oil or any synthetic oil that has become contaminated through use by chemical or physical impurities. Used oil that will be recycled or reused is subject to special management standards, rather than the hazardous waste standards, unless it is treated as a waste (i.e., you decide to send the used oil for treatment and disposal rather than recovery or recycling).

The Life Cycle of a Typical Printing Waste

You've just cleaned off the press with solvents and wiped it down. Now you have liquid solvent waste that must be managed. You own a small business that produces a wide variety of hazardous wastes. You know it is time to investigate and follow the RCRA regulations.

This example details one typical printing waste life cycle for an SQG that is sending solvent waste off site for treatment, and it illustrates the most common scenario of activities. Other life cycles could apply depending on the waste, whether onsite treatment will occur, the type of waste management units used, and your generator status.

1

IDENTIFY WASTE
By running tests or using your knowledge of the waste, identify whether your solvent waste is hazardous. Based on these analyses, determine the appropriate waste code for your solvents; in this case, for example, it is F001. File all records of test results, waste analyses, and other determinations made in the hazardous waste identification process and keep them for at least 3 years.

2

COUNT WASTE
As a second step, determine how much solvent waste you have produced in a calendar month. Do not count solvent placed directly into a solvent recovery still. Count the solvent still bottoms when they are removed from the still, however.

13

SEND WASTE OFF SITE FOR TREATMENT, STORAGE, OR DISPOSAL
Using a registered hazardous waste transporter, send the waste to a RCRA hazardous waste TSDF accompanied by the appropriate manifest and land disposal restrictions notifications and certifications. You can choose from any permitted or interim status TSDF. Optional destinations for solvents include a hazardous waste incinerator that will landfill the incinerator ash, a hazardous waste fuel blender who will blend the solvents with other wastes and then burn them for energy recovery in a boiler or industrial furnaces, or a facility that will recycle the solvents.

12

PREPARE APPROPRIATE NOTIFICATION AND CERTIFICATION
Ensure that all hazardous waste sent off site for treatment, storage, or disposal is accompanied by appropriate notifications and certifications (initial shipments only).

11

PREPARE HAZARDOUS WASTE MANIFEST
Send a manifest along with all hazardous waste sent off site to a TSDF, and keep your copy on site for 3 years. The manifest contains a certification stating that you have a program in place to reduce the volume and toxicity of waste generated to the degree economically practicable, and that you have selected a treatment, storage, or disposal method currently available that minimizes current and future threats from the waste.

DETERMINE GENERATOR STATUS
Based on waste counting, determine your generator status. In this case, you have produced more than 25 gallons, but less than 200 gallons, of hazardous waste in the past month, which means you are an SQG in this calendar month period.

OBTAIN EPA IDENTIFICATION NUMBER
To identify your business as a hazardous waste generator, obtain an EPA identification number by submitting Form 8700-12 (Notification of Regulated Waste Activity), which is obtained from your state hazardous waste agency. Remember, your state requirements might be different.

PLACE WASTE IN ACCUMULATION UNIT
When the waste is generated, place it in an accumulation unit. Mark accumulation tanks and containers with the date the waste was placed in the unit as well as mark the words "Hazardous Waste." Ensure that containers are not rusty or leaking, are stored in areas with adequate ventilation and drainage, and are kept closed except to add or remove waste.

IMPLEMENT LQG PREPAREDNESS AND PREVENTION REQUIREMENTS
Check to be sure that emergency preparedness and prevention requirements are met. These include adequate emergency response systems and notification to local emergency response authorities.

PREPARE CONTINGENCY PLAN
Next, ensure that a contingency plan is prepared in accordance with standards. The contingency plan is designed to minimize hazards from fires, explosions, and unplanned releases. Keep a copy of the contingency plan on site, and assign a facility emergency coordinator to be on site or on call at all times.

IMPLEMENT PERSONNEL TRAINING
Be sure that your personnel are familiar with hazardous waste handling and emergency procedures.

CONTRACT WITH HAZARDOUS WASTE TRANSPORTER
To send waste off site to a TSDF, contract with a registered hazardous waste transporter. To locate a reliable transporter, contact a colleague to obtain a reference.

FOLLOW U.S. DEPARTMENT OF TRANSPORTATION (DOT) PACKAGING STANDARDS
Before shipping waste off site for treatment, storage, or disposal, package, label, and mark waste containers in accordance with all applicable DOT requirements. Call the DOT Hotline at 800 467-4922.

Requirements for Regulated Printers

The following table presents an overview of the federal RCRA regulatory requirements for printers that are either LQGs, SQGs, or CESQGs. As noted, your state might have different or more stringent requirements.

RCRA REGULATORY REQUIREMENTS

REGULATORY REQUIREMENT	LQGs	SQGs	CESQGs	IMPLEMENTATION EXPLANATION
EPA Identification Number	•	•		• Obtain an EPA identification number for each facility within your company. EPA and states use this 12-character identification number to track hazardous waste activities. • Obtain an EPA identification number by submitting form 8700-12 (Notification of Regulated Waste Activity), which is provided by your state hazardous waste agency. This is a one-time notification. Contact your state regarding the need for renotification if circumstances at your facility change.
Hazardous Waste Identification	•	•	•	• Identify whether you generate hazardous waste to determine if you are subject to the RCRA hazardous waste regulations. Test procedures are described in "Test Methods for the Evaluation of Solid Waste, Physical/Chemical Methods, SW-846," or tests can be performed by a local laboratory.
Used Oil Standards	•	•		• If you generate used oil, you are subject to a separate set of management standards from the hazardous waste management standards, if the used oil will be recycled. If used oil is to be treated and disposed of, perform the hazardous waste identification step listed above.
Waste Counting	•	•	•	• Determine how much hazardous waste you generate to determine your generator status.
Accumulation Area	•	•		• You can accumulate waste in a "satellite accumulation area" with minimal regulatory burden. This area must be at or near the point of generation and under the control of the operator of the process generating the waste. • There is no time limit on accumulation in the satellite accumulation area for waste under 55 gallons. • There is a 55-gallon accumulation limit in the satellite accumulation area. Excess waste beyond the 55-gallon limit must be moved from the satellite accumulation area within 3 days. • You must accumulate the waste in containers. • Waste containers must be marked with the words "Hazardous Waste" or other words that identify their contents. • This waste is exempt from other accumulation provisions while in the satellite accumulation area.
Other Accumulation Area (Time and Quantity Limits)	•	•	•	• If waste accumulation does not meet the requirements for satellite accumulation, it is subject to more stringent requirements. LQGs can accumulate waste on site for up to 90 days without a permit. SQGs can accumulate waste for 180 days, or 270 days if the SQG must transport the waste more than 200 miles to a destination facility. • Begin counting accumulation time when waste is first placed in the accumulation unit. • Waste must be put in an exempt unit, recycled, or sent off site within the proper time period stated above. • If an LQG or SQG accumulates wastes beyond the allotted time period, the facility is fully subject to the requirements of a hazardous waste storage facility unless granted an exemption. SQGs cannot accumulate more than 6,000 kg of hazardous waste at any time. • CESQGs cannot accumulate more than 1,000 kg of hazardous waste, more than 1 kg or acutely hazardous waste, or 100 kg of spill residue from acutely hazardous waste at any time.
Storage Unit Requirements	•	•		• Accumulate waste only in units that are in good condition, remain closed except when adding or removing, are inspected at least weekly, are compatible with the types of waste, and meet special standards for ignitable waste and incompatible waste. • LQGs can use accumulation tanks and containers that have been assessed for integrity, have a secondary containment system, and are inspected each operating day. SQGs can use certain accumulation tanks as well. • LQGs can use containment buildings as well. • For all units, the date that the accumulation period begins must be clearly marked and visible on each container. All containers and tanks must be clearly marked or labeled with the words "Hazardous Waste," and accumulation units must be shut down and closed permanently in accordance with standards at the end of the unit life. • LQGs and SQGs can treat their waste without a RCRA storage permit in accumulation units that meet standards.
Air Emissions	•			• LQGs must comply with organic air emissions requirements.
Preparedness and Prevention	•	•		• LQGs and SQGs must comply with preparedness and prevention requirements, including the following: — An adequate internal alarm or communications system. — A device capable of summoning emergency personnel. — Portable fire control equipment. — Adequate water pressure to operate fire control systems. — Adequate testing and maintenance of all emergency systems. — Access to communication or alarm systems during waste handling activities. — Adequate aisle space for emergency response. — An arrangement with local emergency response authorities.
Contingency Plan	•	•		• LQG facilities must prepare a facility contingency plan in accordance with regulations. • The contingency plan must be designed to minimize hazards from fires, explosions, or any unplanned release of hazardous waste or constituents. • A copy of the contingency plan must be kept on site and an additional copy must be submitted to all local emergency services providers. • LQGs and SQGs must have an emergency coordinator on site or on call at all times to respond to emergencies. • Emergency response information must be posted next to the telephone. • In the event of a fire, explosion, or release that could threaten human health outside the facility or when a spill has reached surface water, the emergency coordinator must notify the National Response Center at 800 424-8802.
Personnel Training	•	•		• LQGs must have a personnel training program in accordance with regulatory standards. • Training must instruct facility personnel about hazardous waste management procedures and emergency response. • Training must be completed within 6 months from the applicability of requirements. • The facility must undertake an annual review of initial training. • SQGs must ensure that all employees are thoroughly familiar with proper waste handling and emergency procedures relevant to their responsibilities.
DOT Packaging	•	•		• Before being transported, waste must be packaged, labeled, and marked in accordance with applicable DOT requirements. Call the DOT hazardous materials information line at 202 366-4488 for information.
Offsite Management of Waste	•	•	•	• Hazardous waste sent off site for handling may only be sent to a hazardous waste TSDF or recycling facility unless otherwise exempt. • CESQGs: See onsite management of waste below.
Onsite Management of Waste			•	• CESQGs may either treat waste on site, if they qualify as one of the following types of facilities, or ensure delivery of waste to one of the following types of facilities: permitted RCRA TSDF; interim status TSDF; state authorized to handle hazardous waste; permitted, licensed, or registered by state to handle municipal solid waste according to standards; permitted, licensed, or registered by state to handle nonmunicipal waste; if managed after January 12, 1998, facility is permitted, licensed, or registered by state to handle nonhazardous waste in accordance with standards; facility beneficially uses or reuses, or legitimately recycles or reclaims, its waste; facility treats its waste prior to beneficial use, reuse, or legitimate recycling or reclamation; or a universal waste handler in accordance with standards.
Manifest	•	•		• Hazardous waste sent off site must be accompanied by a manifest, a multipage form that documents the waste's progress through treatment, storage, and disposal. It can usually be obtained from your state agency. • The manifest must have enough copies to provide the generator, each transporter, and the destination facility with one copy for their records and a second copy to be returned to the generator after completion by the destination facility operator. • SQGs that have a contractual agreement with a waste reclaimer that specifies the types and frequencies of shipments do not need to manifest the wastes if they retain a copy of the agreement in their files
Land Disposal Restrictions (LDR) Notification	•	•		• Your waste must meet certain treatment standards under the LDR program. Waste must be treated to reduce the hazardous constituents to levels set by EPA or the waste must be treated using a specified technology. All waste sent off site for treatment, storage, and disposal must be accompanied by appropriate LDR program notifications and certifications. There are no required forms, but these papers must indicate whether or not wastes meet treatment standards, or whether the waste is excluded from the definition of hazardous or solid waste or is otherwise exempt.
Hazardous Waste Minimization	•	•		• To encourage generators to produce less hazardous waste, LQGs are required to have a program in place to reduce the volume and toxicity of waste generated to the degree economically practicable, and must select a currently available treatment, storage, or disposal method that minimizes present and future threats. • LQGs and SQGs must sign a certification of hazardous waste minimization on the manifest. • SQGs must make a good faith effort to minimize waste generation and to select the best available waste management method that they can afford.
Biennial Report	•			• LQGs must submit biennial reports of waste generation and management activity by March 1 of every even-numbered year. EPA, other agencies, and the public use this information to track trends in hazardous waste management.
Recordkeeping	•	•		• LQGs must maintain personnel training records until the facility closes. • LQGs must keep copies of each biennial report for 3 years. • LQGs and SQGs must keep a copy of each manifest for 3 years. • LQGs and SQGs must keep records of test results, waste analyses, and other hazardous waste determinations for 3 years.

Reduce or Minimize the Hazardous Wastes You Generate

The following examples show hazardous wastes typically generated by the printing industry and provide suggestions for how to recycle, treat, or dispose of them according to federal regulations.

Recycling and pollution prevention measures can significantly reduce your regulatory burden and may save your business considerable money. This section presents information on hazardous wastes typically generated by various printing processes and provides suggestions for how to recycle them or implement pollution prevention measures. This list might not cover all chemicals used or wastes produced by the printing industry. Consult the hazardous waste lists and characteristics to determine if you generate other hazardous wastes.

Only the federal hazardous waste codes are provided here. Your state might have different codes for some waste streams. You should check with your state hazardous waste authority for additional waste codes and requirements.

PROCESS	Using ink in lithography, letterpress, screen printing, flexography, and gravure
Wastes Generated	Waste ink with chromium, barium, and lead content; and waste ink contaminated with cleaning solvents, such as trichloroethylene, methylene chloride, 1,1,1-trichloroethane, carbon tetrachloride, 1,1,2-trichloroethane, 1,2,3-trifluoroethane, chlorobenzene, xylene, acetone, methanol, methyl ethyl ketone (MEK), toluene, carbon disulfide, or benzene.
Possible RCRA Waste Codes	D005 (barium), D007 (chromium), D008 (lead), F001 to F005 (listed solvents), D001 (ignitable waste), D018 (benzene), D019 (carbon tetrachloride), D021 (chlorobenzene), and D040 (trichloroethylene).
Potential Recycling, Treatment, and Disposal Methods	• Recycle inks to make black ink. Reformulated black ink is comparable to lower quality new black inks such as newspaper ink. • Dispose of inks by sending them to a fuel blending service that combines these and other wastes for burning at industrial boilers or kilns. • Ship waste using a registered hazardous waste transporter to a hazardous waste TSDF.
Potential Pollution Prevention Methods	• Dedicate presses to specific colors or special inks to decrease the number of cleanings required for each press. • Clean ink fountains only when changing colors or when there is a risk of ink drying. • Run similar jobs simultaneously to reduce waste volume. • Isolate inks contaminated with hazardous cleanup solvents from noncontaminated inks. • Use organic solvent alternatives wherever possible, such as detergent or soap, nonhazardous blanket washes, and less toxic acetic acid solvents.
PROCESS	Cleaning printing equipment
Wastes Generated	Spent organic solvents might include trichloroethylene, methylene chloride, 1,1,1-trichloroethane, carbon tetrachloride, 1,1,2-trichloroethane, 1,2,3-trifluoroethane, chlorobenzene, xylene, acetone, methanol, MEK, toluene, carbon disulfide, or benzene.

Possible RCRA Waste Codes	F001 to F005 (listed solvents), D001 (ignitable waste), D018 (benzene), D019 (carbon tetrachloride), D021 (chlorobenzene), D040 (trichloroethylene), D005 (barium), D007 (chromium), D008 (lead), D018 (benzene), and D019 (carbon tetrachloride).
Potential Recycling, Treatment, and Disposal Methods	• Find a legitimate reuse for spent solvents on site. If reused, the solvents are not considered to be wastes and, therefore, are not regulated. Examples include reusing solvents in a parts-cleaning unit that is used to clean dirty press parts. • Dispose of solvents by sending them to a fuel blending service, which combines these and other wastes for burning at industrial boilers or kilns. • Recycle spent solvents in an onsite solvent still. • Contract with a solvent recycler or supplier to take the spent solvent away and replace it with fresh solvent. • Ship waste using a registered hazardous waste transporter to a hazardous waste TSDF. Most solvents will be recycled or incinerated. • Appropriate management techniques for rags and disposable wipers contaminated with solvents are at the discretion of your state or EPA regional office. A wide variety of options are available including sending them to laundry services after wringing out excess solvent, disposing of them as hazardous waste, treating them to recover the solvents, or incinerating them as hazardous waste. To obtain your appropriate state or regional contact, call the RCRA Hotline at 800 424-9346.
Potential Pollution Prevention Methods	• Print lighter colors first. • Squeegee or wipe surfaces clean before washing with solvent. • Dedicate presses to specific colors or special inks to decrease the number of cleanings required for each press. • Run similar jobs simultaneously to reduce cleanup waste volume. • Use organic solvent alternatives wherever possible, such as detergent or soap, nonhazardous blanket washes, and less toxic acetic acid solvents.
PROCESS	**Developing negatives and prints**
Wastes Generated	Waste photochemical solutions from fixer and rinsewater and from alkaline or acid process baths.
Possible RCRA Waste Codes	D011 (silver) and D002 (corrosive waste).
Potential Recycling, Treatment, and Disposal Methods	• Ship silver waste using a registered hazardous waste transporter to a hazardous waste TSDF. • Recover silver from fixing baths using chemical recovery cartridges, electrolytic recovery cells, or ion exchange resins, and have a commercial recycler pick it up. • Neutralize waste on site in an exempt elementary neutralization unit.
Potential Pollution Prevention Methods	• Eliminate silver waste by using silver-free films such as vasicular, diazo, electrostatic, and photopolymer. • Add ammonium thiosulfate to silver-contaminated baths to extend the allowable buildup of silver. • Use an acid stop bath prior to fixing bath to reduce effect of alkaline developer on fixing bath pH. • Install waterless paper and film developing units to reduce volume of fixer waste. • Employ countercurrent (using water from previous rinsings in initial film washing stage) rather than parallel rinse techniques. • Containerize process baths to keep them from spoiling.

PROCESS	Plate processing
Wastes Generated	Acid plate etching chemicals for metallic lithographic plates, and flexographic photopolymer plates.
Possible RCRA Waste Codes	D002 (corrosive waste), F002 (perchloroethylene), and F003 (butynol).
Potential Recycling, Treatment, and Disposal Methods	• Neutralize waste acid on site in an exempt elementary neutralization unit. • Ship waste using a registered hazardous waste transporter to a hazardous waste TSDF for treatment and disposal.
Potential Pollution Prevention Methods	• Replace metal etching process with nonhazardous alternative. • Check with your state about the use of alternative plate solvents that may or may not be considered hazardous.

PROCESS	Printing processes
Wastes Generated	Unused inks, solvents, and other chemicals used in printing industry.
Possible RCRA Waste Codes	D001, D002, U002 (acetone), U019 (benzene), U211 and D019 (carbon tetrachloride), U055 (cumene), U056 (cyclohexane), U069 (dibutyl phthalate), U112 (ethyl acetate), U259 (ethanol, 2-ethoxy), U359 (ethylene glycol monoethyl ether), U122 (formaldehyde), U154 (methanol), U226 (methyl chloroform), U080 (methylene chloride), U159 and D035 (MEK), U161 (methyl isobutyl ketone), U210 and D039 (tetrachloroethylene), U220 (toluene), U223 (toluene diisocyanate), U228 and D040 (trichloroethylene), U043 and D043 (vinyl chloride), and U239 (xylene).
Potential Recycling, Treatment, and Disposal Methods	• Neutralize corrosive wastes on site in an exempt elementary neutralization unit. • Find a legitimate reuse for unused chemicals on site. If legitimately reused, the chemicals are not considered to be waste. Examples include using solvents to clean dirty press parts. • Dispose of organics with high fuel value by sending them to a fuel blending service, which combines these and other wastes for burning at industrial boilers or kilns. • Ship waste using a registered hazardous waste transporter to a hazardous waste TSDF. Most organics will be incinerated.
Potential Pollution Prevention Methods	• Instigate inventory controls to avoid overstocking on inks, solvents, and other printing chemicals.

Other Environmental Laws Affecting the Printing Industry

THE CLEAN WATER ACT

The Water Pollution Control Act, commonly known as the Clean Water Act (CWA), is the federal program designed to restore and maintain the integrity of the nation's surface waters. CWA controls direct discharges to surface waters (e.g., through a pipe) from industrial processes or stormwater systems associated with an industrial activity. It also regulates indirect discharges, or discharges to publicly owned treatment works (POTW) through a public sewer system, by requiring industrial facilities to pretreat their waste before discharging to a public sewer. Industrial pollutants from the printing industry that the CWA may regulate include organics, such as solvents, and metals such as lead, silver, mercury, copper, chromium, zinc, nickel, and cadmium. A serious concern with wastewater discharges from print shops is the high level of silver contained in photographic fixer solutions and rinsewaters. These solutions will not meet wastewater treatment plant discharge limits unless the silver is removed.

CWA Resources:

- 40 CFR Parts 100 to 129 and 400 to 503
- EPA Office of Water home page: http://www.epa.gov/OW
- EPA Office of Water: 202 260-5700
- Your state water authority, regional EPA office, and your local POTW

Oil Pollution Prevention Under the CWA

The Oil Pollution Prevention regulations were promulgated under the authority of the CWA. These regulations establish requirements for facilities to prevent oil spills from reaching the navigable waters of the United States or adjoining shorelines. The regulations apply to non-transportation-related facilities with a specific aboveground or underground oil storage capacity that, because of their location, can reasonably be expected to discharge oil into the navigable waters of the United States.

Oil Pollution Prevention Regulation Resources:

- 40 CFR Part 112
- Internet access: http://www.epa.gov/

THE CLEAN AIR ACT

The Clean Air Act (CAA) regulates air pollution. It includes national emission standards for new stationary sources within particular industrial categories. It also includes national emission standards for hazardous air pollutants, which are designed to control the emissions of particular hazardous air pollutants (HAPs). Printers generate some HAPs, including benzene, cadmium compounds, carbon tetrachloride, chromium compounds, cobalt compounds, glycol ethers, perchloroethylene, vinyl chloride, and xylene. The CAA also seeks to prevent the accidental release of certain hazardous chemicals and to minimize the consequences of such releases.

CAA Resources:

- 40 CFR Parts 50 to 99
- Control Technology Center, Office of Air Quality, Planning, and Standards, EPA, general information: 919 541-0800, publications 919 541-2777
- Internet access: http://www.epa.gov/oar/oaqps/ctc

CFR GUIDE TO HAZARDOUS WASTE REGULATIONS

To review the RCRA regulations referred to in this document, consult the following citations in 40 CFR:

Part 260—Hazardous waste management system: general.

Part 261—Identification and listing of hazardous waste.

Part 262—Standards applicable to generators of hazardous waste.

Part 263—Standards applicable to transporters of hazardous waste.

Part 264—Standards for owners and operators of hazardous waste and specific types of hazardous waste management facilities.

Part 265—Interim status standards for owners and operators of hazardous waste TSDFs.

Part 266—Standards for the management of specific hazardous wastes and specific types of hazardous waste management facilities.

continued

CFR GUIDE continued

Part 268—Land disposal restrictions.
Part 270—EPA administered permit programs: the Hazardous Waste Permit Program.

Part 271—Requirements for authorization of state hazardous waste programs.

Part 272—Approved state hazardous waste management programs.

Part 273—Standards for universal waste management.

Part 279—Standards for the management of used oil.

FOR MORE INFORMATION

For additional information on any of these laws, contact the RCRA Hotline at 800 424-9346 or 703 412-9810 in the Washington, DC, area. TDD (hearing impaired): 800 553-7672 or 703 412-3323 in the Washington, DC, area.

Laws Affecting Printing

COMPREHENSIVE ENVIRONMENTAL RESPONSE, COMPENSATION, AND LIABILITY ACT (CERCLA OR SUPERFUND)

The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980, commonly known as Superfund, authorizes EPA to respond to releases, or threatened releases, of hazardous substances that might endanger public health, welfare, or the environment, that might come from any source. Superfund also grants EPA the authority to force parties responsible for environmental contamination to clean it up or to reimburse response costs incurred by EPA. The person in charge at your business must report to the National Response Center (phone: 800 424-8802) any release of a hazardous substance that exceeds a designated "reportable quantity" for that substance within a 24-hour period.

Superfund Resources:
- Internet access: http://www.epa.gov/superfund

THE EMERGENCY PLANNING AND COMMUNITY RIGHT-TO-KNOW ACT

The Superfund Amendments and Reauthorization Act (SARA) of 1986 created the Emergency Planning and Community Right-to-Know Act (EPCRA). This law was designed to improve community access to information about potential chemical hazards and to facilitate the development of chemical emergency response plans by state and local governments. The EPCRA regulations establish several types of reporting obligations for facilities that store or manage specified chemicals. Printers are likely to use some of the specific chemicals such as ammonia, formaldehyde, hydroquinone, propylene oxide, sulfuric acid, and 2,4-toluene diisocyanate. Many of the chemicals used by printers, such as phosphoric acid, lead, perchloroethylene, and fuel oil, may be considered hazardous chemicals by the Occupational Safety and Health Administration as well. These are subject to additional requirements under EPCRA.

EPCRA Resources:
- 40 CFR Parts 350 to 372
- The State Emergency Response Commission (contact available from the RCRA Hotline)
- Internet access: http://www.epa.gov/opptintr/tri/index.htm and http://www.epa.gov/swercepp

SAFE DRINKING WATER ACT

The Safe Drinking Water Act (SDWA) mandates that EPA establish regulations to protect human health from contaminants present in drinking water. Under the authority of the SDWA, EPA developed national drinking water standards and created a joint federal-state system to ensure compliance with these standards. EPA also regulates underground injection of liquid wastes under the SDWA to protect underground sources of drinking water.

SDWA Resources:
- 40 CFR Parts 141 to 148
- SDWA Hotline: 800 426-4791
- Internet access: http://www.epa.gov/ogwdw

TOXIC SUBSTANCES CONTROL ACT

The Toxic Substances Control Act (TSCA) allows EPA to collect data on chemicals to evaluate, assess, mitigate, and control risks that might be posed by their manufacture, processing, and use. Printing facilities may be affected by some of the TSCA requirements.

TSCA Resources:
- 40 CFR Parts 702 to 799
- TSCA Hotline: 202 554-1404
- Internet access: http://www.epa.gov/internet/oppts

CONTACTS AND RESOURCES

HOTLINES AND INFORMATION CENTERS

RCRA Hotline

U.S. Environmental Protection Agency
Phone: 800 424-9346 or
TDD 800 553-7672.
In the Washington, DC, area: 703 412-9810 or
TDD 703 412-3323.
Home page: http://www.epa.gov/epaoswer/hotline

Answers questions on matters related to RCRA solid waste, hazardous waste, and underground storage tanks, EPCRA, and CERCLA.

RCRA Information Center

U.S. Environmental Protection Agency
RCRA Information Center (5305W)
401 M Street, SW.
Washington, DC 20460
Phone: 703 603-9230
Fax: 703 603-9234
E-mail: rcra-docket@epamail.epa.gov

Holds and provides public access to all regulatory materials on RCRA and distributes technical and nontechnical information on RCRA issues.

Small Business Ombudsman Clearinghouse/Hotline

U.S. Environmental Protection Agency
Small Business Ombudsman (2131C)
401 M Street, SW.
Washington, DC 20460
Phone: 800 368-5888
Fax: 703 305-6462
Home page: http://www.smallbiz-enviroweb.org

Helps private citizens, small businesses, and smaller communities with questions on all program aspects within EPA.

U.S. Department of Transportation

Hazardous Materials Information Center
Phone: 800 467-4922

Provides information about DOT's hazardous materials regulations.

U.S. Government Printing Office

Superintendent of Documents
P.O. Box 371954
Pittsburgh, PA 15250-7954
Phone: 202 512-1800
Fax: 202 512-2250

Prints and distributes the Code of Federal Regulations. Title 40, Parts 260 to 299, contains most of the RCRA requirements.

ADDITIONAL INTERNET ADDRESSES

EPA Home Page: http://www.epa.gov

EPA RCRA Hazardous Waste Resources
http://www.epa.gov/osw/topics.htm

Code of Federal Regulations
http://www.epa.gov/docs/epacfr40/

The Printer's National Environmental Assistance Center
http://www.pneac.org

Envirosense: http://es.inel.gov
(contains technical, policy, and general information on pollution prevention topics)

OTHER INDUSTRY CONTACTS

Screenprinting and Graphics Imaging Association International
10015 Main Street
Fairfax, VA 22031-3489
Phone: 703 385-1335
Contact: Marcia Y. Kinter
Fax: 703 273-2870
Home page: http://www.sgia.org

Flexographic Technical Association
900 Marconi Avenue
Ronkonkoma, NY 11779
Phone: 516 737-6020
Contact: Dr. Doreen Monteleone
Fax: 516 737-6813
Home page: http://www.fta.ffta.org

National Association of Printing Ink Manufacturers
777 Terrace Avenue, Heights Plaza
Hasbrouck Heights, NJ 07604
Phone: 201 288-9454
Contact: George Fuchs
Fax: 201 288-9453

Graphic Arts Technical Foundation
200 Deer Run Road
Sewickley, PA 15143
Phone: 412 741-6860
Contact: Gary Jones
Fax: 412 741-2311

OTHER RESOURCES

Call the RCRA Hotline (800 424-9346) to order any of the following documents:

Understanding the Hazardous Waste Rules: A Handbook for Small Businesses 1996 Update (EPA530-K-95-001) provides an overview to help small business owners and operators understand how best to comply with federal hazardous waste management regulations. This booklet defines the three categories of hazardous waste generators and assists small quantity generators in determining if federal regulations apply. This document explains how to obtain an EPA identification number, manage waste on site, and ship waste off site.

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Identifying Your Waste: The Starting Point (EPA530-F-97-029) is a short brochure that explains how to determine if you generate hazardous waste. It explains the definition of solid waste and describes the five ways that wastes can be considered hazardous. In addition, it provides information about how to manage the various types of waste that are generated by small businesses.

Call the Pollution Prevention Information Clearinghouse (202 260-1023) to order any of the following documents.

Screen Printing Project: Publications List (EPA744-F-96-021) is a document produced by EPA's Design for the Environment (DfE) program. The DfE Screen Printing Project is a voluntary effort between representatives of the screen printing industry and EPA. The goal of the project is to provide screen printers with information that can help them design operations that are more environmentally sound, specifically regarding screen reclamation. This booklet lists 18 documents in English and 8 documents in Spanish that are available free of charge. Documents include case studies and fact sheets that describe how companies reduced the use of reclamation chemicals in screen printing and reduced the use of solvents in screen reclamation as well as videos on pollution prevention for screen printers.

Reducing VOCs in Flexography (EPA744-F-96-013) is a fact sheet that highlights the experience of one flexographic printer that successfully reduced volatile organic compound emissions and hazardous waste by switching to a water-based ink system.

Vegetable Ester Blanket Washes (EPA744-F-96-014) highlights vegetable esters as an alternative blanket wash. DfE's study of 22 commercially available blanket washes revealed that vegetable blanket washes have more environmentally sound properties than other blanket washes, including reduced flammability.

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Managing Solvents and Wipes (EPA744-K-93-001) is a case study that shows one company's success with substituting environmentally friendlier solvents, reducing the amount of solvent in wastewater, and saving money in the process.

Learning From Three Companies That Reduced VOC Emissions (EPA744-F-96-016) is a fact sheet that highlights the steps that three flexographic printers took to reduce their VOC emissions.

United States
Environmental Protection Agency
401 M Street, SW. (5305W)
Washington, DC 20460

United States Environmental Protection Agency
Solid Waste and Emergency Response (5305W)
EPA530-K-97-007
January 1998
www.epa.gov/osw
http://www.epa.gov/osw/inforesources/pubs/infocus/printing.txt

RCRA IN FOCUS: PRINTING

REGULATORY UPDATE

REDUCING PRINT SHOP WASTES

HOT OFF THE PRESS RESOURCES

IN FOCUS

CONTENTS

FOR MORE INFORMATION CALL:

FOREWORD

Whether you are a screen printer, lithographer, flexographer, or other printer, your printing processes probably generate hazardous waste. That means you are regulated by the U.S. Environmental Protection Agency (EPA) under a federal law called the Resource Conservation and Recovery Act (RCRA). Under RCRA, you are required to follow certain procedures when generating, storing, transporting, treating, or disposing of hazardous waste. RCRA in Focus provides an overview of the federal regulations you are required to follow and the wastes that are likely to be hazardous in your business. It also provides federal recycling and pollution prevention options to help you decrease the amount of hazardous waste you generate.

…

REDUCE OR MINIMIZE THE HAZARDOUS WASTES YOU GENERATE

Recycling and pollution prevention measures can significantly reduce your regulatory burden and may save your business considerable money. This section presents information on hazardous wastes typically generated by various printing processes and provides suggestions for how to recycle them or implement pollution prevention measures. This list might not cover all chemicals used or wastes produced by the printing industry. Consult the hazardous waste lists and characteristics to determine if you generate other hazardous wastes.

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The following examples show hazardous wastes typically generated by the printing industry and provide suggestions for how to recycle, treat, or dispose of them according to federal regulations.

****

Only the federal hazardous waste codes are provided here. Your state might have different codes for some waste streams. You should check with your state hazardous waste authority for additional waste codes and requirements.

****

PROCESS: Using ink in lithography, letterpress, screen printing, flexography, and gravure

WASTES GENERATED: Waste ink with chromium, barium, and lead content; and waste ink contaminated with cleaning solvents, such as trichloroethylene, methylene chloride, 1,1,1-trichloroethane, carbon tetrachloride, 1,1,2-trichloroethane, 1,2,3-trifluoroethane, chlorobenzene, xylene, acetone, methanol, methyl ethyl ketone (MEK), toluene, carbon disulfide, or benzene.

POSSIBLE RCRA WASTE CODES: D005 (barium), D007 (chromium), D008 (lead), F001 to F005 (listed solvents), D001 (ignitable waste), D018 (benzene), D019 (carbon tetrachloride), D021 (chlorobenzene), and D040 (trichloroethylene).

POTENTIAL RECYCLING, TREATMENT, AND DISPOSAL METHODS:
* Recycle inks to make black ink. Reformulated black ink is comparable to lower quality new black inks such as newspaper ink.
* Dispose of inks by sending them to a fuel blending service that combines these and other wastes for burning at industrial boilers or kilns.
* Ship waste using a registered hazardous waste transporter to a hazardous waste TSDF.

POTENTIAL POLLUTION PREVENTION METHODS:
* Dedicate presses to specific colors or special inks to decrease the number of cleanings required for each press.
* Clean ink fountains only when changing colors or when there is a risk of ink drying.
* Run similar jobs simultaneously to reduce waste volume.
* Isolate inks contaminated with hazardous cleanup solvents from noncontaminated inks.
* Use organic solvent alternatives wherever possible, such as detergent or soap, nonhazardous blanket washes, and less toxic acetic acid solvents.

PROCESS: Cleaning printing equipment

WASTES GENERATED: Spent organic solvents might include trichloroethylene, methylene chloride, 1,1,1-trichloroethane, carbon tetrachloride,1,1,2-trichloroethane, 1,2,3-trifluoroethane, chlorobenzene, xylene, acetone, methanol, MEK, toluene, carbon disulfide, or benzene.

POSSIBLE RCRA WASTE CODES: F001 to F005 (listed solvents), D001 (ignitable waste), D018 (benzene), D019 (carbon tetra-chloride), D021 (chlorobenzene), D040 (trichloroethylene), D005 (barium), D007 (chromium), D008 (lead), D018 (benzene), and D019 (carbon tetrachloride).

POTENTIAL RECYCLING, TREATMENT, AND DISPOSAL METHODS:
* Find a legitimate reuse for spent solvents on site. If reused, the solvents are not considered to be wastes and, therefore, are not regulated. Examples include reusing solvents in a parts-cleaning unit that is used to clean dirty press parts.
* Dispose of solvents by sending them to a fuel blending service, which combines these and other wastes for burning at industrial boilers or kilns.
* Recycle spent solvents in an onsite solvent still.
* Contract with a solvent recycler or supplier to take the spent solvent away and replace it with fresh solvent.
* Ship waste using a registered hazardous waste transporter to a hazardous waste TSDF. Most solvents will be recycled or incinerated.
* Appropriate management techniques for rags and disposable wipers contaminated with solvents are at the discretion of your state or EPA regional office. A wide variety of options are available including sending them to laundry services after wringing out excess solvent, disposing of them as hazardous waste, treating them to recover the solvents, or incinerating them as hazardous waste.

POTENTIAL POLLUTION PREVENTION METHODS:
* Print lighter colors first.
* Squeegee or wipe surfaces clean before washing with solvent.
* Dedicate presses to specific colors or special inks to decrease the number of cleanings required for each press.
* Run similar jobs simultaneously to reduce cleanup waste volume.
* Use organic solvent alternatives wherever possible, such as detergent or soap, nonhazardous blanket washes, and less toxic acetic acid solvents.

PROCESS: Developing negatives and prints

WASTES GENERATED: Waste photochemical solutions from fixer and rinsewater and from alkaline or acid process baths.

POSSIBLE RCRA WASTE CODES: D011 (silver) and D002 (corrosive waste).

POTENTIAL RECYCLING, TREATMENT, AND DISPOSAL METHODS:
* Ship silver waste using a registered hazardous waste transporter to a hazardous waste TSDF.
* Recover silver from fixing baths using chemical recovery cartridges, electrolytic recovery cells, or ion exchange resins, and have a commercial recycler pick it up.
* Neutralize waste on site in an exempt elementary neutralization unit.

POTENTIAL POLLUTION PREVENTION METHODS:

* Eliminate silver waste by using silver-free films such as vasicular, diazo, electrostatic, and photopolymer.
* Add ammonium thiosulfate to silver-contaminated baths to extend the allowable buildup of silver.
* Use an acid stop bath prior to fixing bath to reduce effect of alkaline developer on fixing bath pH.
* Install waterless paper and film developing units to reduce volume of fixer waste.
* Employ countercurrent (using water from previous rinsings in initial film washing stage) rather than parallel rinse techniques.
* Containerize process baths to keep them from spoiling.

PROCESS: Plate processing

WASTES GENERATED: Acid plate etching chemicals for metallic lithographic plates, and flexographic photopolymer plates.

POSSIBLE RCRA WASTE CODES: D002 (corrosive waste), F002 (perchloroethylene), and F003 (butynol).

POTENTIAL RECYCLING, TREATMENT, AND DISPOSAL METHODS:
* Neutralize waste acid on site in an exempt elementary neutralization unit.
* Ship waste using a registered hazardous waste transporter to a hazardous waste TSDF for treatment and disposal.

POTENTIAL POLLUTION PREVENTION METHODS:
* Replace metal etching process with nonhazardous alternative.
* Check with your state about the use of alternative plate solvents that may or may not be considered hazardous.

PROCESS: Printing processes

WASTES GENERATED: Unused inks, solvents, and other chemicals used in printing industry.

POSSIBLE RCRA WASTE CODES: D001, D002, U002 (acetone), U019 (benzene), U211 and D019 (carbon tetrachloride), U055 (cumene), U056 (cyclohexane), U069 (dibutylphthalate), U112 (ethyl acetate), U259 (ethanol, 2-ethoxy), U359 (ethylene glycol monoethyl ether), U122 (formaldehyde), U154 (methanol), U226 (methylchloroform), U080 (methylene chloride), U159 and D035 (MEK), U161 (methyl isobutyl ketone), U210 and D039 (tetrachloroethylene), U220 (toluene), U223 (toluene diisocyanate), U228 and D040 (trichloroethylene), U043 and D043 (vinyl chloride), and U239 (xylene).

POTENTIAL RECYCLING, TREATMENT, AND DISPOSAL METHODS:
* Neutralize corrosive wastes on site in an exempt elementary neutralization unit.
* Find a legitimate reuse for unused chemicals on site. If legitimately reused, the chemicals are not considered to be waste. Examples include using solvents to clean dirty press parts.
* Dispose of organics with high fuel value by sending them to a fuel blending service, which combines these and other wastes for burning at industrial boilers or kilns.
* Ship waste using a registered hazardous waste transporter to a hazardous waste TSDF. Most organics will be incinerated.

POTENTIAL POLLUTION PREVENTION METHODS:
* Instigate inventory controls to avoid overstocking on inks, solvents, and other printing chemicals.

OTHER ENVIRONMENTAL LAWS AFFECTING THE PRINTING INDUSTRY

THE CLEAN WATER ACT

The Water Pollution Control Act, commonly known as the Clean Water Act (CWA), is the federal program designed to restore and maintain the integrity of the nation's surface waters. CWA controls direct discharges to surface waters (e.g., through a pipe) from industrial processes or stormwater systems associated with an industrial activity. It also regulates indirect discharges, or discharges to publicly owned treatment works (POTW) through a public sewer system, by requiring industrial facilities to pretreat their waste before discharging to a public sewer. Industrial pollutants from the printing industry that the CWA may regulate include organics, such as solvents, and metals such as lead, silver, mercury, copper, chromium, zinc, nickel, and cadmium. A serious concern with wastewater discharges from print shops is the high level of silver contained in photographic fixer solutions and rinsewaters. These solutions will not meet wastewater treatment plant discharge limits unless the silver is removed.

CWA RESOURCES:

* 40 CFR Parts 100 to 129 and 400 to 503

* EPA Office of Water home page: http://www.epa.gov/OW

* EPA Office of Water: 202 260-5700

* Your state water authority, regional EPA office, and your local POTW

OTHER RESOURCES

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