Best Management Practices
For Printing Operation Facilities

This BMP was prepared by JEA for the control of pollutants discharged to the sanitary collection system.

January 2024

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Introduction

Best Management Practices (BMP) are designed to help facilities comply with environmental regulations and prevent pollution at the source. This best management practice contains a set of operating procedures and guidelines designed to reduce the number of pollutants discharged to the JEA Water Reclamation Facilities (WRF). The development of this BMP is intended to protect the WRF and environment by providing established, common sense, and economical guidelines for printing facilities.

JEA Water Reclamation Facilities receive and treat wastewater from residential, commercial, and industrial customers prior to discharge to the St. Johns River, the JEA reclaim water system, or advanced water treatment facilities prior to discharging to the Floridan Aquifer. Printing facilities have the potential to discharge substances that may interfere with the operations of the WRF to cause it to discharge pollutants to the St. Johns River, our reclaim system, or our aquifer. **Because of this potential, JEA may require these facilities to obtain an Industrial User Discharge Permit. By implementing these Best Management Practices, printing facilities <u>may</u> be exempt from obtaining such a permit.**

Like other businesses that use hazardous materials in their work, printing facilities are subject to federal, state, and local regulations including the Clean Water Act which regulates wastewater and storm runoff. As part of the Clean Water Act, the National Pretreatment Regulation (40CFR 403) was established to protect WRFs and the waterways to which they discharge. The Environmental Protection Agency (EPA) delegates this responsibility to the State of Florida Department of Environmental Protection (FDEP). The state of Florida has delegated local authority to JEA (an electric, water, and sewer utility). It is the responsibility of the JEA Industrial Pretreatment (IP) program to regulate discharges to the WRF and control contaminants that enter the sanitary sewer system.

Background

Printing shops produce many types of waste, some hazardous, some not necessarily hazardous but still potentially damaging to the environment if not handled properly. These wastes may be created from various printing processes such as inks, fountain wash solutions, rinse water from equipment that has been washed in solvent, flexography plate acid bath solutions, etching solutions, and wash-out solutions can negatively impact the water collection basin and pose a health hazard to sewer and water reclamation personnel. All wastes require proper treatment and or disposal which could lead to significant cost to the business.

An economical method of controlling pollution and the production of wastes is to reduce or prevent them from being created. Pollution Prevention (P2) is the use of materials, processes, or practices that reduce or eliminate the creation of pollutants or wastes at the source. P2 uses recycling, good operating practices, material substitutions, and process changes to reduce or eliminate hazardous waste, non-hazardous materials, and pollution. Numerous P2 methods that are practical to implement will be included in this BMP.

Statement of Problem

The potential of print shop wastes entering the sewer collection system can have impacts that are both dangerous and costly to investigate and clean up. Costs associated with these incidents can be charged to a facility that is determined to be the source of the nuisance discharge. Fluids that are considered harmful or hazardous can cause various problems when introduced to the sanitary sewer system. Printing facilities may not discharge the following non-domestic wastes to the sewer system:

- Prohibited Discharges (See Appendix A) – any waste that could cause a fire or explosion, block sewers, cause odors, or corrode or damage the sewer system.
- Hazardous or non-hazardous raw product.
- Hazardous or non-hazardous waste product.
- Toxic substances that can kill or inhibit the microorganisms that wastewater treatment plants rely upon to treat the wastewater.
- Rinse water from equipment that has been washed in solvent.
- Inks and fountain solutions.
- Flexography plate acid bath solutions, etching solutions and wash-out solutions.
- Cleaning solvents.
- Any wastewater which exceeds JEA's wastewater discharge limits (See Appendix B).

Policy

JEA, as the Control Authority, is required to regulate all facilities that discharge to the WRF. It is a requirement of the JEA Industrial Pretreatment regulation (section 2.8) for all printing facilities discharging to the sewer system to abide by this policy and implement the Best Management Practices in this document to minimize the amount of pollutants entering the WRF.

Statement of Discharge Policy

1. All printing facilities that have the potential to discharge to the JEA sewer collection system must adhere to this BMP.
2. Solvents, inks, emulsifiers, and other raw materials are strictly prohibited from being discharged to the JEA sewer system.
3. All process wash water must be hauled off site or pre-treated prior to discharge to the sewer system.
4. All print shop facility discharges must be in accordance with applicable state, local or federal rules and regulations.
5. Hazardous and nonhazardous wastes must be stored and disposed of according to the Resource, Conservation and Recovery Act (RCRA).

Best Management Practices

I. Education & Training

A Successful Program Begins at the Top

- Facility Management should demonstrate a commitment to pollution prevention (P2) that employees will follow. Meaningful support from management is essential for pollution prevention success and education within the facility.

Employee Education

- Employees must be trained in P2 practices as described in this document. The training records should be kept on site and made available during an inspection.
- Employees must be familiar with the hazards associated with the material they are using and be aware of potential sources of contamination.
- Employees must receive refresher trainings at least annually.
    - See appendix D for a training log example which must be kept on site in accordance with section III. below.

II. Material Handling & Spill Response

Storage and Containment

The operator must ensure that the following materials are stored using spill containment:

- Solvents, dyes, paints, inks, and other chemicals related to printing processes.
- Waste solvents, waste paint, waste dyes, and other waste from printing processes.
- When choosing storage locations for waste containers, be mindful to avoid:
    - Floor drains
    - Electrical service panels/heat sources
    - Customer/employee walkways
    - Building access/egress by public
    - Storm water drainage and contamination
    - Vehicle movements
- Keep containers on impermeable surface like concrete and cover.
- Rain mixed with hazardous waste may be required to be treated as a hazardous waste.
- Keep dissimilar fluids separate so they may be recycled. Contact your recycler for the company's specific requirements.

Improper storage practices

Proper storage practices

- Store material and wastes in appropriate storage containers.
    - Store in a manner that minimizes the potential for accidental discharge to drains (in secondary containment or located away from drains).
    - Containers or drums must be kept in good condition and stored in a manner that minimizes risks of ruptures, leaks, or corrosion.
    - Inspect storage containers regularly for leaks, rust, or defects.
    - Keep containers closed, unless volatile explosion is possible, and ventilation is needed.
    - Store materials in compatible containers. For example, use plastic containers for corrosive materials.
    - Retain waste manifests or disposal records for three years.

DO NOT store chemicals near drains!!!

The key to Pollution Prevention is for everyone at your shop to know what causes water pollution. Make the "Pollution Prevention Practices" part of your daily operating procedures!

Spill Response

All facilities must have an onsite spill response plan that will be taught to all on-site employees. The spill response plan and absorbent materials will be kept in a central location, known to all employees. At a minimum the plan will meet the following requirements:

- The spill response plan must be kept on site and available for inspection and should be posted in a highly visible location.
- Adequate cleanup equipment and supplies must be always kept in stock.
- The operator must clean up any spills immediately.
- The plan must define roles and responsibilities for spill response and provide contact numbers for appropriate agencies if the spill escapes containment and enters the sewer system or storm drain.
    - See Appendix D for more information regarding contact numbers to report spills.
    - See Appendix E for a spill response plan example.

Post a Sign

- Post the enclosed **"Don't Pain the Drain"** sign in a highly visible areas to remind employees of best management practices.
  Don'tPain the Drain UPDATED.pdf

III. Record Requirements

Record Keeping and Retention

Operators of printing operations must keep written records to show due diligence regarding site activities and to demonstrate that requirements of the BMP have been met.

Accurate and up-to-date records must be kept for a period of three years and must be available for inspection. This includes:

- Employee BMP & Spill Prevention Training Records
- Dates of all inspections and/or maintenance to the treatment works.
- Description of the inspection or maintenance of the treatment works including:
    - Filter/Cartridge change dates.
    - Meter/pump calibrations.
- Hauled waste records.
    - Hazardous & Non-hazardous waste manifests.
    - Recycling manifests.

IV. Recycling & Waste Management

Reuse and Recycling
Purchase reusable or recyclable products wherever possible. Reduce or eliminate the hazardous materials that you use. Materials that have the potential to be recycled include the following: oil, cleaning solvents, oily rags, and ink. Recycling is not only good for the environment, but also for business. Often, it is cheaper to recycle, and you may even be able to get a return on your recycled goods.

Hazardous Waste Management
Hazardous wastes produced at printing facilities must be managed. These wastes include used press/screen cleaning solutions, untreated fixer, parts cleaning solvents, waste inks, haze removers, fountain solutions, coatings or adhesives, waste oil, film developers, and waste photomechanical transfer activators (SEE SILVER BMP).

- Do not dispose of hazardous waste to the sanitary sewer system, storm drain, or ground.
- Call suppliers or your waste disposal or recycling company to see how your hazardous waste may be re-used, recycled, and disposed.
- All hazardous waste or materials must be secondarily contained or placed in a bin that can contain up to 110% of the entire contents of the containers should there be a leak.
- Keep these items stored indoors or in a covered area outdoors. Do not store these materials near a storm or sewer drain.
- Check containers on a regular basis for potential holes and leaks.
- In areas where hazardous materials are stored, spill kits and spill response plans must be readily available.

Ink and Waste Ink Management

- Minimize the amount of waste ink generated.
- Contract a reputable waste disposal company to dispose of waste inks.
- Store waste ink in covered containers in a secure area away from drains or sumps.
- Remove ink from screen frames with rags and chemical ink remover prior to removing the emulsion. Then use emulsion remover and de-ghosting agents in your screen reclaiming area.

Handling Contaminated Rags

- Do not launder rags used for cleanup and spills of contaminated waste on-site. Store soiled rags in a closed container according to your local fire codes.
- If a laundry service is used, inform your laundry of the rag's contents. Ensure to use a laundry facility that is permitted to handle the contaminated rags.

Spent Fountain Solution

Fountain solutions have the potential to cause serious pollution if illegally discharged. If discharged to the sewer system or directly to surface water such as streams, these chemicals can render the water toxic to fish and other aquatic life.

- Do not pour spent fountain solution into treatment works, sanitary sewer, or storm drains. Dispose of fountain solutions as specified in the Safety Data Sheets (SDS).
- Some fountain solutions may contain chemicals that should be managed as Hazardous Wastes.
- Use in-line filters in recirculating units to reduce or eliminate the need to discharge or dispose of fountain solution prematurely.
- Consider investing in waterless presses that require no fountain solution or water.

Waste Oil

Used oil must not be discharged to the sewer or storm drains. Lubricating oils are used in presses and bindery equipment. This equipment may need maintenance or oil changes from time to time. Oil leaks may also occur, and you may have a small oil spill that requires cleanup.

- Don't mix used oil with other wastes.
- Keep used oil in its own container clearly labeled "USED OIL ONLY"
- Immediately clean up any spills and replace leaking containers.
- Work with vendor to identify lubricants with the longest life that are as environmentally friendly as possible.

V. Maintenance Practices

Maintenance Practices

- Equipment must always be maintained. Routinely check equipment and storage areas for small leaks and other needed repairs.
- Locate and repair all leaks to prevent loss of raw materials. Practice preventive maintenance to avoid future losses.

Plate Processing

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

Parts Washing

- Do not use evaporation as a means of disposing of solvents.
- Avoid using chlorinated compounds for parts washing.
- Make sure that the spent solvent in collection tanks is too dirty to be used again before changing to clean product. Manage waste solvents as described by the SDS.

Screen Printers:

- Evaluate high pressure water/detergent rinsing systems (aqueous cleaners) to replace traditional solvent screen cleaning systems as a means to reduce the amount of solvent used in the workplace.

- Reclaim screens immediately after a print run; remove as much excess ink from screens prior to cleaning and return to original container.
- Apply haze remover only to areas where a ghost image is visible rather than to the entire screen. This will reduce chemical use.
- Try to find a degreaser that does not contain hazardous and/or chlorinated solvents.
- If using plastisol inks with metallic pigments, cleaning screens over sinks is prohibited. Instead, facilities may use a self-contained parts cleaner as a better option.
- Do not clean screens over the sink if using lacquer thinner or any other highly flammable solvent to clean them.
- Place catch basins around the screen during screen reclamation to capture chemical over spray for recovery and reuse.
- Collect screen wash water and sludge and place into sealed containers for disposal.
- To minimize screen washing and reduce amount of chemicals used, dedicate a press to a specific color on a specific day if possible.
- If using solvents for screen washes, reuse solvent for progressively dirtier tasks. This will reduce the amount of new or clean solvents required.
- Work with suppliers to find water soluble screen washes to reduce the need for solvents.

VI. Photographic Imaging

Silver compounds are considered hazardous waste under State and Federal law under certain conditions. Silver laden wastewater generated from the processing of photographic images shall not be discharged to the sanitary sewer system. If your operations uses photographic imaging activities, see JEA's Silver Best Management Practices for more information.

Conclusion

Following the requirements and suggestions in this document and utilizing Best Management Practices will help businesses comply with the JEA Industrial Pretreatment discharge standards will assist JEA in protecting Northeast Florida waterways. Your business may benefit by reducing environmental liability through the implementation of practical and typically cost saving practices. Questions can be directed to:

JEA
Industrial Pretreatment, JEA HQ
225 North Pearl Street
Jacksonville, FL 32202
Email: ip@jea.com
Or at our website: https://www.jea.com/Business_Resources/Industrial_Pretreatment/

References & Resources

Compliance Assistance Pilot Project. June 2004. Florida Department of Environmental Protection.

University of South Florida – Screen Printing Guidelines
Link: https://www.usf.edu/administrative-services/environmental-health-safety/documents/screen-printing-guidelines.pdf

Santa Cruz Sanitation District – Printing Operations Best Management Practices
Website: https://www.cityofsantacruz.com/government/city-departments/public-works/environmental-compliance/best-management-practices

Union County Sanitation District – Pollution Prevention
Website: https://unionsanitary.com/businesses/pollution-prevention/pollution-prevention-programs

EPA Screen Printing Inspection Document
Link: https://www.epa.gov/sites/default/files/2014-01/documents/screen_printing_ctsa.pdf

City of Tulsa – Printing Best Management Practices
Website: https://www.cityoftulsa.org/government/departments/water-and-sewer/wastewater/wastewater-bmps/

Printing Operations Best Management Practices – Capital Regional District
Website: https://www.crd.bc.ca/education/stormwater-wastewater-septic/at-work/business-sectors

National Compliance Assistance Clearinghouse – comprehensive source of compliance assistance materials.
Website: https://www.epa.gov/compliance/compliance-assistance-centers

Small Business Ombudsman Hotline – provides regulatory and environmental information concerning small business assistance to enhance regulatory compliance.
Phone: (800) 368-5888 or (202) 566-1970

EPA's Pollution Prevention and Information Clearinghouse – EPA's pollution prevention site with information and brochures on P_2 in the regulations and voluntary programs.
Website: https://www.epa.gov/p2/pollution-prevention-resources#p2rx

National Pollution Prevention Roundtable– Information and publications on P_2.
Website: www.p2.org

Industrial Pretreatment

Prohibited Discharges

In accordance with §2.1 of JEA's *Industrial Pretreatment Regulation*, no user shall introduce or cause to be introduced into JEA's Wastewater Treatment Facilities (JEAWWF) any pollutant or wastewater which causes pass-through or interference or shall introduce or cause to be introduced pollutants, substances, or wastewater that have not been processed or stored in such a manner that they could be discharged to JEAWWF. No significant industrial user shall discharge to JEAWWF without authorization from JEA. These general prohibitions apply to all users of JEAWWF whether or not they are subject to categorical pretreatment standards or any other Federal, State, or local pretreatment standards or requirements.

Additionally, no user shall introduce or cause to be introduced into JEAWWF the following pollutants, substances, or wastewater:

(1) Pollutants which create a fire or explosive hazard in JEAWWF, including, but not limited to, waste streams with a closed-cup flash point of less than 140°F (60°C) using the test methods specified in 40 CFR 261.21.

(2) Wastewater having a pH lower than 5.5 or higher than 12.0, or otherwise causing corrosive structural damage to JEAWWF or equipment.

(3) Any solids or viscous substances that may cause obstruction to flow or be detrimental to sewerage system operations. These objectionable substances include, but are not limited to, asphalt, dead animals, offal, ashes, sand, mud, straw, industrial process shavings, metals, glass, rags, feathers, tar, plastics, wood, whole blood, paunch manure, bones, hair and fleshings, entrails, paper dishes, paper cups, milk containers, or other similar paper products, either whole or ground.

(4) Any animal or vegetable based oils, fats, or greases whether or not emulsified, which would tend to coat or clog, cause interference, pass through, or adverse effects on JEAWWF. Grease removed from grease traps or interceptors shall not be discharged to JEAWWF.

(5) Pollutants, including oxygen-demanding pollutants (BOD, etc.), released in a discharge at a flow rate and/or pollutant concentration which, either singly or by interaction with other pollutants, will cause interference with JEAWWF.

(6) No user shall discharge into a sewer line or other appurtenance of the JEAWWF any wastewater having a temperature greater than 140^{o}F (60^{o}C) or which will inhibit biological activity in the treatment plant resulting in interference, but in no case wastewater which causes the temperature at the introduction into the treatment plant to exceed 104 ^{o}F (40^{o}C). If a lower temperature limit is required than 140^{o}F at the point of connection to JEAWWF, then the limit shall be depicted in the user's wastewater discharge permit.

(7) Petroleum oil, non-biodegradable cutting oil, or products of mineral oil origin at a total concentration exceeding 100 mg/l.

(8) Wastewater containing toxic pollutants in sufficient quantity, either singly or by interaction with other pollutants, to injure or interfere with a wastewater treatment process, constitute a hazard to humans or animals, create a toxic effect in the receiving waters of JEAWWF, causing the treatment plant to fail a toxicity test or exceed the limitation set forth in a categorical pretreatment standard.

(9) Storm water, surface water, ground water, artesian well water, roof runoff, subsurface drainage, condensate, deionized water, non-contact cooling water, and unpolluted wastewater, unless specifically authorized by JEA.

(10) Pollutants which result in the presence of toxic gases, vapors, or fumes within JEAWWF in a quantity that may cause acute worker health and safety problems. Acute worker health and safety problems may be defined using the most recent information on TWA-TLV, TWA-STEL, and IDLH from the American Conference of Governmental Industrial Hygienists (ACGIH), National Institute for Occupational Safety and Health (NIOSH), EPA, and the Occupational Health and Safety Administration (OSHA).

(11) Trucked or hauled pollutants, except at discharge points designated by JEA in accordance with §6.3 of JEA's *Industrial Pretreatment Regulation*.

(12) Noxious or malodorous liquids (City of Jacksonville, City Odor Ordinance, Chapter 376, Ordinance Code), gases, solids, or other wastewater which, either singly or by interaction with other wastes, are sufficient to create a public nuisance or a hazard to life, or to prevent entry into the sewers for maintenance, inspection or repair.

(13) Wastewater which imparts color that cannot be removed by the treatment process, and causes a violation of JEAWWF's NPDES permit such as, but not limited to, dye wastes and vegetable tanning solutions.

(14) Wastewater containing any radioactive wastes or isotopes except in compliance with applicable Federal and State regulations or permits issued by Federal and State Agencies and specifically authorized by JEA.

(15) Sludge, screenings, or other residues from the pretreatment of industrial wastes.

(16) Medical or infectious wastes, except as specifically authorized by JEA in a wastewater discharge permit

(17) Detergents, surface-active agents, or other substances which may cause excessive foaming and cause interference and pass-through JEA Wastewater Treatment Plants.

(18) Waters or wastes containing phenol or other taste- or odor-producing substances in such concentrations exceeding limits established by JEA, as necessary after treatment of the composite sewage to meet requirements of Federal, State or other public agencies having jurisdiction for the discharge to the receiving waters.

(19) Garbage that has not been properly shredded to such a degree that all particles will be carried freely in suspension under flow conditions normally prevailing in JEAWWF. At no time shall the concentration of properly ground garbage exceed a level that would prevent JEAWWF from maintaining the required efficiency or cause operational difficulties.

(20) Swimming pool drainage unless specifically authorized by JEA. No person who fills a swimming pool with non-metered water may discharge swimming pool drainage to a sanitary sewer without a JEA wastewater discharge authorization.

(21) It shall be unlawful for silver-rich solution from a photographic processing facility to be discharged or otherwise introduced into JEAWWF, unless such silver-rich solution is managed by the photographic processing facility in accordance with the most recent version of the Silver CMP prior to its introduction into JEAWWF.

Appendix B Local Limits

Local Limits

The following pollutant limits are established to protect against pass-through and interference. No person shall discharge wastewater containing in excess of the following:

Maximum Allowable Discharge Limits

POLLUTANTS	BUCKMAN ST WWF	DISTRICT II WWF	SOUTHWEST WWF	ARLINGTON EAST WWF	MANDARIN WWF
Cadmium (mg/l)	1.20	1.20	1.20	1.20	1.20
Chromium (mg/l)	10.00	10.00	10.00	10.00	10.00
Copper (mg/l)	3.38	0.82(1)	none	3.38	3.38
Cyanide (mg/l)	3.38	3.38	3.38	3.38	3.38
Lead (mg/l)	1.40	0.70	1.90	1.17	1.90
Mercury (mg/l)	0.006(1)	0.006(1)	0.006(1)	0.006(1)	0.006
Molybdenum (mg/l)	2.66(1)	0.741 lb/day(1) (2)	none	none	none
Nickel (mg/l)	3.98(1)	3.98	3.98	3.98	3.98
Silver (mg/l)	0.43	0.43	0.43	0.43	0.43
Zinc (mg/l)	2.61	2.61	2.61	2.61	2.61

(1) Limits for contributory flow users only. Industrial user will be notified by JEA regarding its status as a contributory user.
(2) Limitations applied in IU permits as determined by JEA.

The above limits apply at the point where the wastewater is discharged to JEAWWF. All concentrations for metallic substances are for "total" metal unless indicated otherwise. JEA may impose mass limitations in addition to, or in place of, the concentration-based limitations above.

Appendix C – JEA Contact List

NOTIFICATION PROCEDURE FOR POTENTIAL PROBLEMS TO THE SANITARY SEWER

In the event of any discharge that may adversely impact the JEA Water Reclamation Facility, the User shall notify JEA according to the following procedure. Such notification is required by §7.6 of JEA's *Industrial Pretreatment Regulation*.

1. VERBAL NOTIFICATION

Verbal notification shall be made immediately by the fastest means of communication available (generally by telephone) to one of the following contacts. Notification shall include the location of the discharge; date and time thereof; type of waste, concentration and volume of the waste; and corrective actions taken.

A. Normal Business Hours:

JEA Industrial Pretreatment
904-665-5326

B. After Hours, Weekends, Holidays:

JEA Environmental Incident Response Line
904-620-9921

2. WRITTEN NOTIFICATION

Within five (5) days following an accidental discharge, the permittee shall submit a detailed written report describing the cause(s) of the discharge and the measures to be taken to prevent similar future occurrences. The report shall be submitted to:

JEA
Industrial Pretreatment Program
225 N. Peal Street
Jacksonville, FL 32202-3139
Email: ip@jea.com

Appendix D

JEA Training Log Example Template

Facility Name _____

Address: _____

Directions: All facility employees must be trained on best management practices to prevent discharge of potentially harmful substances to the sewer collection system. Further, each employee must be trained on how to respond in the event of a spill. All training must be done within 30 days of hire and renewed annually. Training records must be kept on-site and made available for inspection. All training records must be kept on site for a minimum of three (3) years.

Date	Training Topic	Trainer Name	Trainer Signature	Attendee Name	Attendee Signature

Maintain log for minimum three years from last record.

Appendix E

Posted Example
Spill Response Plan

Spill Response Procedures:

1) **Protect yourself first. Be sure and put on the appropriate personal protective equipment: gloves, goggles, and an apron.**
2) **Contain the spill with trays, or absorbent materials. Do not allow the material to reach storm or sewer drains.**
3) **Check the Safety Data Sheet (SDS) for the spilled substance for safe handling and disposition.**
4) **Clean up the spill as directed on the SDS.**
5) **Use dry clean-up methods. Do not send any wash water to the sewer system or storm drain!**
6) **Package and label all contaminated materials (absorbents, PPE, liquids) for off-site disposal.**
7) **Notify the manager/owner that a spill has occurred (see below).**
8) **Notify the appropriate government agency (see below)**

Spill Response Personnel

Manager Name:	**Phone:**
Owner Name:	**Phone:**
Government Entities	**Phone**
JEA Incident Response	**904-620-9921**
Fire Department	
City of Jacksonville Environmental Response	**904-255-7100**