

JEA Best Management Practices for Mercury Waste Management in Dental Offices



Prepared by JEA for the control of mercury discharged to the sanitary collection system by dental offices.



JEA is a not-for-profit community-owned utility.

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**JEA Best Management Practices
for Mercury Waste Management in Dental Offices**

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JEA Best Management Practices for Mercury Waste Management in Dental Offices

The JEA Amalgam Best Management Practices (BMPs) for Dental Facilities are designed to comply with environmental regulations, prevent pollution, and assist dental offices in the proper management of mercury and amalgam waste in their day-to-day activities.

This best management practices booklet contains a set of **required** and **recommended operating procedures and guidelines** designed to reduce the amount of mercury discharged to the JEA sanitary sewer system, a publicly owned treatment works (POTW). Proper implementation of these procedures is intended to protect Northeast Florida's natural environment from the discharge of hazardous mercury-containing compounds.



Because of the hazardous nature of mercury, JEA may require dental facilities to obtain an Industrial User Discharge Permit. By implementing these JEA Best Management Practices, dental facilities may be exempt from obtaining such a permit.

As part of the Clean Water Act, the National Pretreatment Regulation (40CFR 403) was established to protect publicly owned treatment works and the waterways into which they discharge. The Environmental Protection Agency (EPA) delegates this responsibility to the State of Florida Department of Environmental Protection (FDEP). In Jacksonville, the FDEP has delegated local authority to JEA (the electric, water, and sewer utility). It is the responsibility of JEA's Industrial Pretreatment program to regulate non-residential discharges to the publicly owned treatment works.

This manual identifies certain practices that dental offices are required to follow. These requirements are summarized at the end of each topic as **BMP Summary Requirements**. In addition, guidance is given on optional practices that offer environmentally preferable practices for dental offices and may help save money through waste minimization. These will be summarized in each section under the heading, **"To take compliance to the next level, consider the following."**

Why We Are Concerned with Mercury

The practice of dentistry can result in the release of mercury-containing amalgam to the environment. Even though mercury is a naturally occurring element, it bio-accumulates in the tissues of fish as a persistent, toxic



contaminant. In dental use, mercury is chemically bound to other metals such as silver, copper, tin and zinc to create a restorative material – dental amalgam.

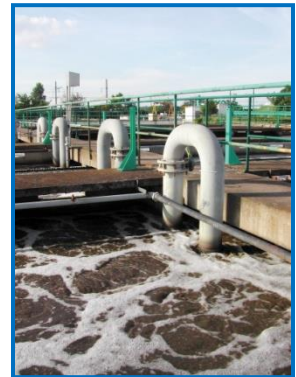
Once in the environment, elemental mercury may be converted into a more toxic form that works its way up the food chain into larger fish. Fish, such as tuna, swordfish, king mackerel and tilefish, can have very high levels of mercury in their bodies. At these high levels, mercury can affect the developing human nervous system. Populations who are at greatest risk for health effects associated with consuming contaminated fish include pregnant women, women planning to become pregnant and children under the age of six.

How Dental Amalgam and Mercury Enter the Environment

There are several ways mercury from dental offices enters the environment:

- **Wastewater**

Amalgam rinsed down drains enters the sanitary sewer and eventually is carried to the wastewater treatment plant. Any amalgam particles in wastewater have three potential routes into the environment: deposited in sewage grit, incorporated into sewage sludge or discharged with the treated wastewater to the receiving stream. The vast majority of mercury is captured by the treatment plant in its sludge, which is processed and sold as fertilizer. Excessive levels of mercury content in this sludge may render it unusable as a fertilizer.



- **Regulated Medical Waste**



Amalgam can be co-mingled with potentially infectious material (i.e. blood, teeth); therefore, it may be mistakenly placed in a biohazard waste container (commonly known as “Red Bag”). Materials in the sharps container or the red biohazard bags are typically incinerated or autoclaved. If amalgam is present in the incinerated waste, the mercury will volatilize and be released into the environment through the atmosphere.

- **General Trash**

If amalgam scrap is discarded into ordinary trash, it eventually will be disposed in a landfill. When deposited in a landfill, mercury can leach into the groundwater collection system contaminating wells and eventually discharged to a wastewater treatment facility. Be aware that mercury can be present in other office equipment, such as thermometers, blood pressure machines, thermostats and fluorescent light bulbs. When spent, these office materials should be recycled properly.

Pollution Prevention

The goal of pollution prevention (P2) is to **reduce or eliminate the use of toxic or polluting substances at the source, so there is less waste to be managed**. Pollution prevention activities and recycling in dental offices are essential to minimize releases of polluting substances into the sewer system, medical waste stream or ordinary trash. Because pollution prevention focuses on reducing the source of the waste, it is very cost-



conscious, and many facilities that implement pollution prevention methods find they save time and money immediately on disposal activities and handling costs. In addition, pollution prevention efforts may facilitate compliance with hazardous waste regulations and reduce long-term environmental and health liabilities.

For dentistry, one effective pollution prevention strategy is the use of restorative products that are less harmful to the environment. Substitute less hazardous materials for amalgam when they are clinically appropriate and in the best interest of the patient.

For more on pollution prevention efforts in Florida, visit <http://www.dep.state.fl.us/pollutionprevention/default.htm>.

Hazardous Waste/Generator Status

Some materials dentists use, such as amalgam, are made from or contain hazardous constituents. When these materials are spent, or can no longer be used and must be discarded, they may be regulated as hazardous wastes. The dental office is responsible for the proper management, handling, and recycling or disposal of all hazardous materials within and leaving the facility. Although most dental offices only generate small amounts of hazardous waste, it is important to determine the hazardous waste generator status. The following definitions will help determine the generator category.



In general, hazardous waste generators are categorized based on the amount of hazardous waste generated per month.

- [Conditionally Exempt Small Quantity Generators \(CESQGs\)](#) generate less than 220 pounds of hazardous waste per month and less than 2.2 pounds of acute hazardous waste (such as some pesticides, toxins or arsenic and cyanide compounds) per month.
- [Small Quantity Generators \(SQGs\)](#) generate 220-2,200 pounds of hazardous waste per month.
- [Large Quantity Generators \(LQGs\)](#) generate 2,200 pounds or more of hazardous waste per month or 2.2 pounds or more of acute hazardous waste per month.

Most dentists are classified as conditionally exempt small quantity generators.

Reporting and regulatory requirements become increasingly stringent as more hazardous waste is handled. Labeling and disposal practices have very important implications for how scrap amalgam is regulated. It is preferable to store unusable amalgam in containers labeled "Amalgam (contact or non-contact) – to be recycled." By labeling this material as a recyclable material and disposing with a qualified, licensed recycler, facilities can avoid the additional regulation and possible costs associated with dealing with this material as hazardous waste. This labeling and disposal practice can be very beneficial especially if a facility is near the threshold of increasing its generator status.

To find out more on hazardous waste rules, contact the Division of Waste Management, 2600 Blair Stone Road, Tallahassee, FL 32399, or online at <http://www.dep.state.fl.us/waste/categories/hazardous/pages/facility.htm>.

Best Management Practices

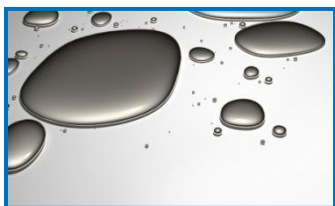
While pollution prevention is the ideal solution for addressing waste management issues, implementation of pollution prevention measures is not always immediately feasible in practice. Therefore, the following sections present information on **Best Management Practices (BMPs)** for the dental office.

BMPs are economically achievable actions that can be used to control or reduce the entry of pollutants into the environment. Pollution prevention measures combined with BMPs help ensure regulatory compliance. The first step is to understand the responsibilities for managing wastes.

BMP #1 - DISPOSAL

Elemental Mercury

Although most dentists have adopted the use of pre-capsulated amalgam, some offices may still have supplies of elemental mercury tucked away in a storeroom. This supply, especially if it is forgotten or poorly managed, exists as a potential risk to employees and can be very expensive to clean up.



Recycle all unused free mercury. Many hazardous waste haulers and dental amalgam recyclers will accept elemental mercury for recycling.

Amalgam

Common dental amalgam is composed of approximately 49 percent mercury, 35 percent silver and the remainder is tin, copper and zinc. These heavy metals have the potential to adversely impact water quality. There are regulated limits for most of these metals in wastewater discharged to JEA's sanitary sewer system (see Appendix C).



Contact Amalgam is any amalgam that is left over from a procedure, collected in chair-side traps and filters or any unused amalgam from a procedure. It should be collected and stored in an airtight container labeled as "Contact amalgam – to be recycled."

Non-Contact Amalgam is any amalgam capsule that is defective or expired and has not been used in a procedure. It should be collected and stored in a separate container labeled, "Non-contact amalgam – to be recycled." Some recycling companies may pay for non-contact amalgam. If this is not the case, all recycled amalgam may be placed in the same container labeled "contact amalgam." Be sure to follow the requirements of a licensed amalgam handler or recycler for the storage, disinfection, labeling, packaging and shipping of scrap amalgam.

Amalgam Capsules

Convert to pre-capsulated amalgam capsules and use the correct size needed for each procedure. A variety of amalgam capsule sizes should be stocked to minimize the amount of waste generated from each restoration. After mixing the amalgam, the empty capsules should be placed in an airtight container labeled "Non-contact amalgam – to be recycled." Unused amalgam and capsules with amalgam residue should also be placed in the

non-contact amalgam container. Use standard personal protection equipment precautions.

For further information on amalgam recycling, see Appendix A.

BMP #1 Summary Disposal Requirements

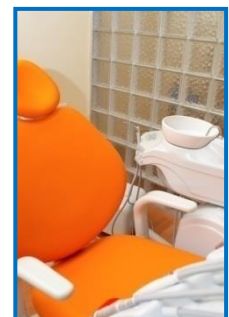
- **Never discard elemental mercury or amalgam in any sink or drain, sharps container, biohazard waste bag (red bag) or trash.**
- **Always recycle or dispose all mercury-containing materials through a licensed mercury waste recycler or handler.**

To take compliance to the next level, consider the following:

- ✓ **Discontinue using elemental mercury.**
- ✓ **Discontinue mixing your own amalgam.**
- ✓ **Use pre-capsulated alloy to reduce the risk of an elemental mercury spill.**
- ✓ **Stock a variety of capsule sizes to reduce waste.**
- ✓ **Use amalgam substitutes when clinically and ethically appropriate.**
- ✓ **Designate all sinks as "Sanitary Use Only – No Chemical or Amalgam Disposal" to eliminate cleaning of amalgam-contaminated instruments in the sink.**

BMP #2 - AMALGAM RETENTION EQUIPMENT AND MAINTENANCE

Multiple levels of amalgam retention devices, when properly installed and maintained, can prevent up to 81 percent of amalgam waste from entering the sewer system. The combination of properly functioning chair-side traps and secondary vacuum filters provides the minimum required levels of amalgam retention necessary to comply with these BMPs. Additional retention (up to 99 percent) can be attained by installing an optional amalgam separator system.



The control of waste dental amalgam includes proper management of the traps and filters used in the dental office vacuum system. Because of the difficulty in effectively cleaning amalgam particles from the trap or filter

without spilling debris into the drain or trash, disposable chair-side traps and secondary vacuum filters are required for compliance with this BMP. Finer screens are recommended due to increased effectiveness at trapping amalgam particles so consider using a smaller mesh size trap. Replacing a 40-mesh screen with a 100-mesh screen (if the vacuum system can function adequately) can greatly reduce the amount of amalgam particles that pass through the system and subsequently into the wastewater. Most dental amalgam recyclers will allow the combination of amalgam particles with used trap and filters in the contact amalgam waste container. Be sure to check the requirements prior to disposal.

Chair-side Traps

Regularly maintained chair-side traps will best retain amalgam particles while maximizing system flow efficiency. When conducting any maintenance procedure, make sure to use appropriate personal protective equipment.



A. Replace chair-side amalgam traps as recommended by the equipment manufacturer or at least once per quarter.

B. Remove the trap from the chair-side equipment and place the entire trap into the airtight container labeled "Contact amalgam for recycling." Install a new trap. Do not rinse the trap as this could introduce amalgam into the drain.

Please note that the chair-side trap from a dental chair dedicated to hygiene only can be disposed of as typical medical waste and is not regulated under this BMP.

Secondary Vacuum Pump Filters (in the central vacuum)

- A.** All vacuum systems (wet or dry) require secondary filtration equipment installed to retain mercury containing solids prior to discharge of wastewater to the public collection system. This secondary filter must be capable of retaining solid particles with a particle size of at least 210 μm (microns).
- B.** Replace vacuum pump filter as recommended by the equipment manufacturer or at least once per quarter.
- C.** Remove the filter apparatus. Do not pour the liquid content into any sink or drain. While holding the filter container over a tray or other container that can catch spills, put the lid on the filter and place it (with liquid contents) into the contact amalgam container. When the container is full, it should be sent for recycling. Be sure to check with the amalgam recycler to ensure these filters are acceptable.

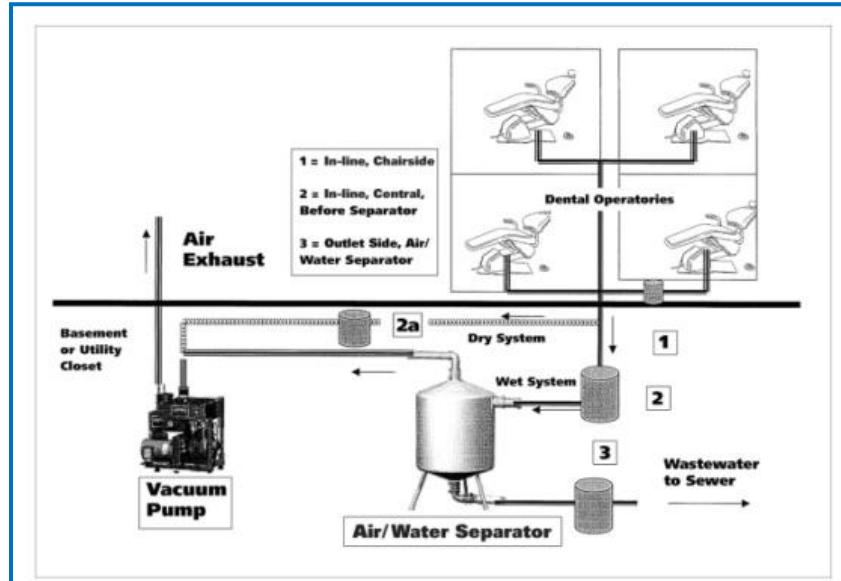
Amalgam Separators (Optional)

Due to the superior amalgam removal capability of amalgam separators over chair-side traps and vacuum filters, the installation of a separator should be considered. These systems are designed to capture very fine amalgam particles.

When a separator is used in conjunction with appropriately functioning chair-side traps and secondary vacuum filters, amalgam removal rates can increase to the 95 percent to 99 percent range.

At this time, JEA does not require amalgam separator technologies to be employed in

dental offices but they are recommended. Any decision to purchase an amalgam separator should be made based upon the specific technology that works best for the existing equipment.



BMP #2 Summary Equipment and Maintenance Requirements

- **Never rinse traps, filters or screens over the sink or drain.**
- **Install disposable-only chair-side traps and secondary vacuum system filters to retain solid particles with a particle size of at least 210 μm (microns).**
- **Regularly maintain the filter system according to manufacturer recommendations or at least once per quarter.**
- **Dispose of trap, filter and separator waste through a licensed mercury waste recycler or handler.**

To take compliance to the next level, consider the following:

- ✓ **Use the finest mesh disposable traps and secondary filters that the vacuum system can efficiently handle.**
- ✓ **Install an amalgam separator that is ISO 11143 compliant.**

The American Dental Association recommends that any dentist considering the purchase and installation of an amalgam separator read "Purchasing, Installing and Operating Dental Amalgam Separators: Practical Issues," K.R. McManus, P.L. Fan; J. American Dental Association 2003 (134:1054-1065), online at <http://jada.ada.org/cqu/content/full/134/8/1054>.

BMP #3 - STORAGE

For small quantity generator offices, it may take a long time to generate enough amalgam waste to trigger a disposal event. Sometimes, dental offices will store waste amalgam under radiographic fixer or other solutions prior to disposal. These solutions may dissolve the mercury in the amalgam



and thus are classified as mercury-contaminated hazardous waste. These liquids are prohibited from being discharged to the JEA sanitary sewer.

For example, the silver in X-ray fixer can be reclaimed, thereby reducing cost and disposal liability. However, if it is used to store scrap amalgam, then the only option for disposal is as hazardous waste. Not only is the creation of this additional waste unnecessary, it is also costly for disposal and creates an additional source for potential spills. If this type waste is present, contact a licensed dental amalgam recycler or hazardous waste hauler for information on discarding this material properly and begin to store the scrap amalgam in a dry, properly labeled, air-tight container.

Contact a mercury recycler/hauler to determine if any disinfection is required prior to shipment. If amalgam must be disinfected before shipment to the recycler, do so just prior to shipment. Do not use any bleach-containing chemicals that dissolve mercury, an autoclave or any other method that uses heat for disinfection. The heat from an autoclave may cause the mercury to volatilize and be released to the air.

BMP #3 Summary Storage Requirements

- **Never store amalgam waste under any liquid.**
- **Store all amalgam waste dry in a properly labeled, air-tight container.**
- **Dispose of any liquids used to disinfect contact amalgam as hazardous. These cannot be discharged to the sewer system.**

To take compliance to the next level, consider the following:

- ✓ **If the mercury recycler/handler requires it, add a liquid disinfectant just prior to shipment. This liquid must be disposed of as hazardous waste.**

BMP #4 - ENVIRONMENTAL RELEASE

Plumbing Replacement and Repairs

After an office adopts its new amalgam management practices, it may be appropriate to clean or replace sink traps. Mercury from past activity often settles at low points such as sink traps and sumps. The slow dissolution of the mercury in a sink trap or sump can release mercury into the JEA sanitary sewer for years after past disposal practices have been corrected.



When plumbing parts are removed or cleaned, caution should be taken to avoid spilling the contents in case amalgam or mercury is present. Pour and brush out the sludge and handle it as if it were contact amalgam, or have it discarded as hazardous waste. Contact an amalgam or mercury recycler or a licensed hazardous waste handler (Appendix A) for further clarification. The plumbing parts can then be re place or recycled.

Disinfectants, Cleaners and Other Chemicals

- Follow the label directions on the product container for guidance on the proper use, handling and disposal of used disinfectants and cleaners, along with the residue remaining in the product containers.
- Use only the amount of cleaning solution needed for the job.
- Flammable materials that release ignitable vapors must not be discharged to the JEA sanitary sewer. These materials are considered hazardous waste.
- Unused products should be discarded through a hazardous waste hauler or, if acceptable, send unused products back to the manufacturer or supplier.

Purchase environmentally-friendly cleaners for general janitorial and cleaning applications. Vendors supply bulk-dispensing units for many of the citrus-based cleaners, which enables one product to be used at varying diluted strengths for a wide range of applications. This can lessen staff exposure and avoid wasted, expired material disposal. The non-profit organization Green Seal independently tests and evaluates products. If products meet their criteria, they qualify for "Green Seal Certification."

Green Seal maintains a list of commercially available cleaners and disinfectants that have the Green Seal Standard for Industrial and Institutional Cleaners. This list is available online at:

<http://www.greenseal.org/findaproduct/cleaners.cfm>.

The American Dental Association offers more information on the effect of disinfectants and line cleaners on the release of mercury from amalgam on its Web site:

http://www.ada.org/prof/resources/positions/statements/amalgam_plumbing_guidelines.pdf.

Spills

Do not handle mercury or mix amalgam in carpeted areas because it is very difficult to collect all the contaminants if there is a spill. In the event of a mercury spill, put on nitrile gloves (do not use latex gloves as mercury can penetrate latex) along with other appropriate proper protective equipment and clean it up immediately. Never clean up a mercury spill using a vacuum cleaner as this has the potential to spread mercury dust and/or vapor throughout the area in the vacuum exhaust. Mercury spill kits are available from companies that specialize in Occupational Safety and Health Administration compliance supplies, amalgam recyclers and dental product suppliers. Before purchasing a kit, make sure it includes complete instructions on how to perform a spill cleanup. Train staff members in proper spill-cleaning procedures.



BMP #4 – Summary Environmental Release Requirements

- **Never use an autoclave or heat to disinfect amalgam.**
- **Never use disinfectants or line cleaners containing chlorine (bleach) to flush dental unit wastewater lines.**

To take compliance to the next level, consider the following:

- ✓ **Review “The effect of disinfectants and line cleaners on the release of mercury from amalgam” in the Journal of the American Dental Association (2006, Vol. 137, No. 10, 1419-1425), available online at <http://jada.ada.org>.**

BMP #5 - RECORDS REQUIREMENTS

Retention of records is required to demonstrate compliance with required BMPs. Dental offices are required to maintain a written or electronic log of all maintenance performed on traps and vacuum system or plumbing. In addition, retain receipts, shipping manifests and other certified documentation from the recycler or hazardous waste hauler of all amalgam waste recycling and disposal shipments. These documents must be kept on file for at least three years, and must be made available to authorized JEA inspectors upon request.



BMP #5 Summary Records Requirements

- **Retain the following records for three years:**
 - **All waste amalgam recycle/disposal receipts and shipping manifests,**
 - **All trap, filter and separator maintenance records, and**
 - **BMP training documentation for all employees.**
- **Submit a one-time certification form demonstrating compliance with this BMP to JEA within 90 days of initial discharge.**
- **Compliance certification form must be kept on site and made available for inspection as long as the Dental Amalgam Rule applies to the business.**

BMP #6 - TRAINING

Proper knowledge and handling of amalgam is vital to preventing accidental exposure and release of hazardous materials into the environment. A proper training program must include all six JEA Best Management Practices included in this manual. Anyone who handles or has the potential to come into contact with mercury-containing materials must be trained in these BMPs for proper mercury/amalgam waste handling requirements.

BMP #6 Summary Training Requirements

- **Use these JEA Best Management Practices to teach proper handling techniques to all staff who may come into contact with mercury-containing materials.**

To take compliance to the next level, consider the following:

- ✓ **Require all personnel who may come into contact with mercury-containing materials to review the Occupational Safety and Health Administration's proper mercury safe handling and disposal procedures at the OSHA Web site: <http://www.osha.gov/SLTC/mercury/standards.html>.**

For additional copies of this guide or more information, please visit our Web site:

https://www.jea.com/About/Wastewater/Industrial_Pretreatment/Mercury_Waste_Management_in_Dental_Offices.aspx

Or contact:

**JEA Industrial Pretreatment
21 W. Church St., T-8
Jacksonville, FL 32202
(904) 665-8300**

Appendix A

Amalgam and Mercury Recycling

Supplemental Guidance for Recyclers and Wastes

Many waste handlers are licensed to receive, transport and manage amalgam and mercury materials, along with other hazardous materials. However, only a limited number of facilities across the country are licensed to treat and/or recycle amalgam and mercury-containing materials. Be sure to obtain documentation that the hauler or recycler is appropriately licensed to handle mercury-containing materials and that they are disposing the materials appropriately. If the materials are improperly disposed in a landfill or elsewhere, the generating dental office may be responsible for any penalties and costs associated with remediation.

There are various companies that will provide recycling of amalgam and other mercury-containing materials. Contact any of these companies to negotiate this service and shipping arrangements. In addition, other environmental service companies can provide pickup of these materials. These companies are typically go-betweens that will eventually ship to one of the disposal companies. A licensed waste handler should take care of all administrative issues related to shipping and handling of potentially hazardous materials.

A list of dental amalgam recycling facilities reviewed by the Florida Department of Environmental Protection can be found at the following Web site:

http://www.dep.state.fl.us/waste/quick_topics/publications/shw/mercury/AmalgamRecyclerList042507.pdf.

The American Dental Association has also assembled a directory of dental waste transporters at the following Web site:

http://www.ada.org/prof/resources/topics/topics_amalrecyclers.pdf.

Appendix B



Industrial Pretreatment PROHIBITED DISCHARGES AND LOCAL LIMITS

1. Prohibited Discharges

In accordance with §2.1 of JEA's *Industrial Pretreatment Regulation*, no user shall introduce or cause to be introduced into a JEA Wastewater Treatment Facilities (JEAWWF) any pollutant or wastewater that 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 that 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°F (60°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 °F (40°C). If a lower temperature limit is required than 140°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) Stormwater, 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-STEEL, 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 JEA'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 JEA's WWTP. At no time shall the concentration of properly ground garbage exceed a level that would prevent JEA's WWTP 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 C

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 JEA WWF. 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 D

Acknowledgements



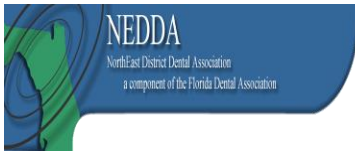
Florida Department of Environmental Protection (FDEP)
FDEP Amalgam BMP

http://www.dep.state.fl.us/waste/quick_topics/publications/shw/mercury/AmalgamBMPsBrochure.pdf



Florida Dental Association (FDA)

<http://www.floridadental.org/index.html>



NorthEast District Dental Association (NEDDA)

<http://www.nedda.org>



American Dental Association (ADA)

http://www.ada.org/prof/resources/topics/amalgam_bmp.asp

The ADA provides a document entitled, ADA Best Management Practices for Amalgam Waste, as well as a 10-minute video on handling waste amalgam. The document and video are available on the ADA Web site http://www.ada.org/prof/resources/topics/amalgam_bmp.asp



Virginia Dental Association (VDA)

<http://www.deq.state.va.us/p2/mercury/documents/manual.pdf>



**Virginia Department of Environmental Quality
(VDEQ)**

<http://www.deq.state.va.us/>