



# Washington Suburban Sanitary Commission

## Regulatory Services Group Industrial Discharge Control Program

### Hospital and Healthcare Facility Waste Best Management Practices (BMPs)

#### Chemical Waste

All substances with a closed cup flashpoint of less than 140 degrees Fahrenheit or 60 degrees Centigrade, using the test methods specified in 40 CFR 261.21, are prohibited from discharge to the sanitary sewer (40 CFR Part 403.5 and the WSSC Plumbing and Fuel Gas Code, section 804.1.2).

#### Alcohols

Alcohols are prohibited from discharge to the sanitary sewer due to their ignition hazard (The WSSC Plumbing and Fuel Gas Code, section 804.1.2).

**Ethanol** – Used in medical laboratories. At 100%, ethanol has a closed cup flashpoint of 55 degrees Fahrenheit.

**Methanol** – Used for fixation, staining and slide preparation. At 100%, methanol has a closed cup flashpoint of 51.8 degrees Fahrenheit.

**Isopropanol** – Used as a topical disinfectant. At 100%, isopropanol has a closed cup flashpoint of 53 degrees Fahrenheit.

#### **BMPs**

Reuse and recycling through distillation

#### Acetone

Used as a solvent for slide cleaning and staining in Histology, Hematology, and Pathology laboratories. At 100%, acetone has a closed cup flashpoint of -4 degrees Fahrenheit, which defines it as a hazardous waste. If the used product is less than 10% acetone and the closed cup flashpoint is >140 degrees Fahrenheit then the acetone may be disposed of to the sewer.

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## **BMPs**

Minimize quantities used and/or use low percent concentration product.

### **Xylene**

Xylene is toxic and highly flammable. It does not mix with water. Uses include: cleaning agent, extractor, or solvent for slide cleaning in Histology, Pathology, and Hematology. Any substance determined to be a fire and/or explosion hazard is prohibited from being discharged to the WSSC's sanitary sewer (The WSSC Plumbing and Fuel Gas Code, section 804.1.2).

### **BMP**

**Do not dispose of to the sanitary sewer.**

Reduce source, reuse and recycle. Use a substitute material.

### **Picric Acid**

Picric Acid may be an explosion hazard when dried, exposed to heat or complexed with metals. Used in fixatives and stains such as Bouin's solution. Any substance determined to be a fire and/or explosion hazard is prohibited from being discharged to the WSSC's sanitary sewer (The WSSC Plumbing and Fuel Gas Code, section 804.1.2).

### **BMP**

**Do not dispose of to sanitary sewer**

Substitute material with alternative such as acetic acid.

### **Sodium Azide**

Sodium Azide can react with metals such as those found in lead solder and copper pipes to form explosive lead or azide salts. Use includes preservative in reagents. Any substance determined to be a fire and/or explosion hazard is prohibited from being discharged to the WSSC's sanitary sewer (The WSSC Plumbing and Fuel Gas Code, section 804.1.2).

### **BMP**

**Do not dispose of to the sanitary sewer**

Substitute for non-explosive preservatives such as methyl paraben or propyl paraben.  
Collect and dispose of as a hazardous waste

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## **Ethidium Bromide**

Commonly used in molecular biology laboratories. Has mutagenic properties, which could present a hazard when disposed of to the sanitary sewer or to solid waste.

### **BMP**

Do not dispose of to the sanitary sewer unless treated. Solutions containing heavy metals, organics, cyanides, or sulfides should be disposed of as a hazardous waste. (<http://web.princeton.edu/sites/ehs/chemwaste/etbr.html>).

## **Formaldehyde**

Aldehydes are prohibited from being discharged to WSSC's sanitary sewer (The WSSC Plumbing and Fuel Gas Code, section 804.1.2). Formaldehyde causes cancer in laboratory animals and it may be a human carcinogen.

### **BMPs**

Substitute material, source reduction, reuse and recycle.  
Collect and dispose of as a hazardous waste.

## **Formalin**

Formalin is a mixture of formaldehyde and methanol.

### **BMPs**

See Formaldehyde information.

## **Gluteraldehyde**

Aldehydes are prohibited from being discharged to WSSC's sanitary sewer (The WSSC Plumbing and Fuel Gas Code, section 804.1.2). Used as disinfectant in hospitals, it is a potent skin irritant and can cause asthma and chemical sensitization disorders.

### **BMPs**

Substitute for alternatives that are safer for workers and the environment. (Sustainable Hospitals -10 Reasons to Eliminate Gluteraldehyde; EPA Region 9 fact sheet "Reducing Ethylene Oxide and Gluteraldehyde Use" at: <http://www.epa.gov/region09/waste/p2/projects/hospital/glutareth.pdf> )

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## **Orthophthaldehyde (Cidex OPA)**

Used as substitute disinfectant to Gluteraldehyde. Aldehydes are prohibited from being discharged to WSSC's sanitary sewer (The WSSC Plumbing and Fuel Gas Code, section 804.1.2)

### **BMPs**

Substitute for alternatives that are safer for workers and the environment. (Sustainable Hospitals -10 Reasons to Eliminate Gluteraldehyde; EPA Region 9 fact sheet "Reducing Ethylene Oxide and Gluteraldehyde Use" at:

<http://www.epa.gov/region09/waste/p2/projects/hospital/glutareth.pdf> )

Cidex OPA may be discharged to the sanitary sewer, when substitution is not available, ONLY after treatment with Glycine product neutralizing the aldehyde component.

## **Mercury**

Any substance containing mercury in amounts greater than 1ug/l is prohibited from being discharged to WSSC's sanitary sewer. Dental practices may follow Commission approved Best Management Practices for dental waste dischargers, in lieu of monitoring for the numerical discharge limitation. (The WSSC Plumbing and Fuel Gas Code, section 804.1.20).

### **BMPs**

Inventory and phase-out use of mercury and healthcare products and devices through substitution, such as:

- Sphygmomanometers – Substitute mercury-containing with solid state electronic sensing devices for monitoring blood pressure
- Thermometers – Substitute mercury-containing with digital and alcohol thermometers and temperature strips
- Esophageal dilators from endoscopy
- Preservatives – Substitute mercury containing preservatives with non-mercury
- Fixatives- Substitute
- Stains – Substitute
- Dental amalgams –Substitute with mercury-free composite material.

<http://www.epa.gov/mercury/healthcare.htm>

## **Silver**

Any substance containing silver in excess of 1.2 mg/l is prohibited from being discharged to WSSC's sanitary sewer (end-of-pipe). Used in radiology for diagnostics.

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## **BMPs**

Phase-out wet chemistry and convert to digital or install and maintain a silver recovery unit capable of meeting the WSSC silver limitation.

### **Zinc**

Must meet WSSC discharge limitation of 4.2 mg/l at end-of-pipe

### **Copper**

Must meet WSSC discharge limitation of 2.0 mg/l at end-of-pipe

### **Cyanide**

Must meet WSSC discharge limitation of 1.0 mg/l at end-of-pipe

## **Radioactive Waste**

Radioactive wastes or isotopes are prohibited from discharge to the sanitary sewer in concentrations in excess of limits established by applicable local, State, or Federal regulations. No time or dilution adjustments shall apply (The WSSC Plumbing and Fuel Gas Code, section 804.1.10).

## **BMPs**

Collect and store in specifically labeled containers until hauled off-site.

## **Biological Agents**

Biological Agents include prions, viruses, bacteria, fungi, and some unicellular and multicellular eukaryotes and their associated toxins. They can be used for bioterrorism or biological warfare. The WSSC prohibits the discharge of any substance containing viable pathogenic or parasitic organisms that could pose a health hazard to the public or interfere with the proper operation of the wastewater collection or treatment systems (The WSSC Plumbing and Fuel Gas Code, section 804.1.11).

## **BMPs**

### **Do not dispose of to the sanitary sewer.**

Contain contaminated wastewater in a structure with no connection to the sanitary sewer until treated or hauled off-site.

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## **Biohazard Waste**

Biohazard waste is medical waste contaminated with blood or other infectious materials. The WSSC prohibits the discharge of any substance containing viable pathogenic or parasitic organisms that could pose a health hazard to the public or interfere with the proper operation of the wastewater collection or treatment systems (The WSSC Plumbing and Fuel Gas Code, section 804.1.11).

### **BMPs**

Autoclave, dispose of to red bags and have waste hauled by a medical waste disposal company.

## **Bioevent Agents**

Bioevent agents are any biological, chemical, or other hazardous agents released during a mass casualty event or have the potential to cause mass casualties if released. Hospital response plans should include management of bioevent wastes and decontamination wastes.

### **BMPs**

Wastewater and chemicals used for decontamination should be collected in a containment tank and hauled away by a certified hauler. Immediately notify WSSC when the Hospital activates its decontamination system due to a bioevent. Main telephone number: (301) 206-4002; during the day contact I-Hsin Lee McConnell, Unit Coordinator, Industrial Discharge Control Unit at (301) 206-8597.

[http://www.osha.gov/dts/osta/bestpractices/firstreceivers\\_hospital.pdf](http://www.osha.gov/dts/osta/bestpractices/firstreceivers_hospital.pdf)

[http://www.mwcog.org/pdf/bio\\_hazard\\_plan.pdf](http://www.mwcog.org/pdf/bio_hazard_plan.pdf)

## **Blood**

### **BMP**

Do not dispose of whole blood to the sanitary sewer.  
Coagulate blood and dispose of to red bags and have waste hauled by a medical waste disposal company.

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## **Pharmaceuticals – (hazardous)**

The WSSC has adopted The U.S. Food and Drug Administration recommendations to not dispose of unused or expired pharmaceutical drugs to the sanitary sewer unless the label or accompanying patient information specifically instructs to do so. Any pharmaceutical flushed down the toilet or discharged to the sanitary sewer could potentially make its way into the drinking water source. Wastewater treatment plants do not treat for many pharmaceuticals. Properly disposing of these items may help prevent future contamination to the environment.

Make sure that if you are using a reverse distributor that they have the capability to destroy hazardous pharmaceuticals.

EPA is proposing to amend the Universal Waste Rule to add hazardous pharmaceuticals to the rule. By doing so, EPA would be facilitating the implementation of pharmaceutical take-back programs by removing RCRA barriers in the collection of pharmaceuticals.

<http://www.hercenter.org/hazmat/pharma.cfm>

## **-Endocrine Disruptors**

Endocrine disruptors are chemicals that interfere with master glands, such as the thyroid, adrenal, and reproductive glands and hormones. Many common endocrine disruptors are estrogens, testosterone, progesterone, androgens, contraceptives, and oxytoxics.

### **BMPs**

**Do not dispose of to the sewer system.**

Manage as hazardous waste.

## **-Vitamin/Mineral preparations with Heavy Metals**

Some of these preparations may contain chromium, cadmium or selenium which could fail the toxicity characteristic level for that metal.

### **BMPs**

**Do not dispose of to the sanitary sewer if heavy metals are present.**

Manage as hazardous waste.

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### **-Chemotherapeutic Agents**

Chemotherapeutic agents are toxic and may pose a threat to human health and the environment.

#### **BMPs**

**Do not dispose of to the sewer system.**

Recommend handling all chemotherapy agents greater than trace amounts as hazardous waste even if the waste doesn't meet the definition of a P- or U-listed chemical or exhibit the characteristics of a hazardous waste. This reduces the potential liability for improper handling of chemotherapy waste streams. However, it is important to know the properties of each agent, since some fit the criteria of a biohazard.

### **-Formulations with a Listed Active Ingredient that is Not the Sole Active Ingredient**

#### **BMPs**

**Do not dispose of to the sanitary sewer.**

Manage as a hazardous waste.

### **-Drugs meeting NIOSH Hazardous Drug Criteria**

#### **BMPs**

**Do not dispose of to the sanitary sewer.**

Manage as a hazardous waste.

### **-Drugs listed in Appendix VI of OSHA Technical Manual**

#### **BMPs**

**Do not dispose of to the sanitary sewer.**

Manage as a hazardous waste.

### **-Carcinogenic Drugs**

These are substances that are known or appear to cause cancer. The 12<sup>th</sup> edition of the Report on Carcinogens can be accessed at: <http://ntp.niehs.nih.gov/ntp/roc/twelfth/roc12.pdf>

#### **BMPs**

**Do not dispose of to the sanitary sewer.**

Manage as a hazardous waste



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**-Drugs with LD50s Less Than or Equal to 50 mg/kg**

**BMPs**

**Do not dispose of to the sanitary sewer.**

Manage as a hazardous waste.

**-All other Drugs – (Non-hazardous)**

**BMPs**

**- Do not dispose of to the sanitary sewer**

-Collect for incineration at either a regulated medical waste or municipal solid waste incinerator permitted to handle non-hazardous pharmaceutical waste.

- Avoid land filling pharmaceutical waste, which may leach into groundwater and enter the sanitary sewer when the leachate is discharged.

- Return unused medications to a pharmaceutical reverse distribution firm.

**-Unused IVs**

Only those IVs that contain saline, lactate, nutrients, non-heavy metal vitamins, potassium and other electrolytes may be discharged to the sewer.

**BMPs**

**Do not dispose of to the sanitary sewer**

**All others – Manage as Hazardous Waste**

**Central Sterile Reprocessing**

Ethylene Oxide (EtO) is used to sterilize moisture and heat sensitive instruments. It is a known human carcinogen; it is extremely reactive and flammable.

**BMPs**

**Do not dispose of to the sanitary sewer**

Substitute for alternative. (EPA Region 9 fact sheet “Reducing Ethylene Oxide and Gluteraldehyde Use” at:

<http://www.epa.gov/region09/waste/p2/projects/hospital/glutareth.pdf>)

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## **Housekeeping Chemicals**

- Solvents, oil-based paints and paint thinners
- Pesticides

### **BMPs**

- Minimize the use of solvents, oil-based paints and paint thinners.
- Pesticides are included in the Federal Universal Waste Rule, which facilitates the collection of this waste from the public at various collection sites.

## **Boiler Maintenance**

All chemicals used to maintain boilers must meet WSSC's discharge limitations if disposed of to the sanitary sewer.

## **Kitchen grease**

See WSSC Plumbing and Fuel Gas Code for approved devices for wastewater grease removal.

### **BMPs**

- Yellow or fryer grease shall be stored in containers for off-site removal to be rendered.
- Grease interceptors shall be on a maintenance schedule for removal of brown grease by a licensed waste hauler.
- WSSC prohibits discharges that could solidify or become viscous at temperatures between 40-degrees Fahrenheit (4°C) and 140-degrees Fahrenheit (60°C); or at any other temperature that could cause obstruction and/or interference with the conveyance system or the POTW processes.

<http://www.wsscwater.com/home/jsp/content/fog-index.faces#q5>