

Disposal of Laboratory Wastes to Sanitary Sewer

Drain disposal must only be used when the drain flows to the sanitary sewer* system, which eventually goes to the wastewater treatment plant. Storm drain systems flow directly into surface water and should NEVER be used for chemical disposal. Floor drains may flow to storm sewers and should NEVER be used for disposal. Laboratory sinks should be used for disposal of chemicals on the safe list as discussed below.

1. Sulfuric, hydrochloric, acetic and phosphoric acids may be discharged in larger quantities after they have been neutralized. They must be neutralized to a pH of between 5.0 and 9.0 before they can be drain disposed to the sanitary sewer.

2. Ashes, cinders, sand, mud, straw, shavings, metal, glass, rags, feathers, tar, plastics, wood, manure, hair and fleshings, entrails, paint residues, solid or viscous substances capable of causing obstruction to the flow of sewers

Some chemicals that are not appropriate for drain disposal include:

Halogenated hydrocarbons, Nitro compounds, Mercaptans, Flammables (immiscible in water), Explosives such as azides and peroxides, Water soluble polymers that could form gels in the sewer system, Water reactive materials, Malodorous chemicals, Toxic chemicals such as carcinogens, mutagens, teratogens, Substances that boil below 50° C, Liquids with a temperature greater than 150° C

3. Inorganics

Dilute solutions of inorganic salts where both cation and anion are suitable for drain disposal. Materials listed are considered to be relatively low in toxicity. Compounds of any of these ions that are strongly acidic or basic must be neutralized to a pH range of 5.0 to 9.0 before drain disposal

Not Safe for Drain Disposal

The following materials are prohibited from drain disposal:

Ashes, cinders, sand, mud, straw, shavings, metal, glass, rags, feathers, tar, plastics, wood, manure, hair and fleshings, entrails, paint residues, solid or viscous substances capable of causing obstruction to the flow of sewers

Some chemicals that are not appropriate for drain disposal include:

Halogenated hydrocarbons

Nitro compounds

Mercaptans

Flammables (immiscible in water)

Explosives such as azides and peroxides

Water soluble polymers that could form gels in the sewer system

Water reactive materials

Malodorous chemicals

Toxic chemicals such as carcinogens, mutagens, teratogens

Substances that boil below 50° C

Liquids with a temperature greater than 150° C

Mixtures that have a component not found on the safe list

Safe for Drain Disposal

Inorganics

Dilute solutions of inorganic salts where both cation and anion are listed below are suitable for drain disposal. Materials listed are considered to be relatively low in toxicity.

Compounds of any of these ions that are strongly acidic or basic must be neutralized to a pH range of 5.0 to 9.0 before drain disposal. See Appendix A.

Ion compounds that must be neutralized

A1 +3BO 3 -3

Ca +2B 4O 7 -2

NH 4 +Br -

H +CO 3 -2

K +C1 -

Li +HSO⁻³

Mg +2OCN⁻

Na +OH⁻

Neutralization Procedures

The neutralized waste is discharged to the sanitary sewer meeting all applicable discharge standards

Therefore, the decision for neutralization must be made on a case-by-case basis:

The waste chemical must be a "characteristic corrosive" aqueous solution. If the chemical waste carries any additional listed, process or characteristic codes, it must not be neutralized and disposed of to the sanitary sewer, but managed as hazardous waste. An example of this would be a corrosive solution containing a listed or characteristic toxic code (a heavy metal).

If a chemical waste does meet the code criteria for neutralization it must be neutralized to a pH range of 5.0 to 9.0, then discharged to the sanitary sewer

General Instructions:

Do neutralizations in a fume hood as fumes and heat may be generated. Wear lab coat or apron, gloves and goggles

Keep containers cool during process

Work slowly

When neutralization is complete, flush to sewer followed by copious amounts of water

Keep a log stating: chemical being neutralized, neutralizing chemical, pH and quantity discharged, date and your initials (see Environmental Health and Safety web site). Submit this log to Environmental Health and Safety when submitting hazardous waste logs for hazardous waste removal.

Equipment:

Elementary Neutralization Unit (large beaker or plastic bucket)

Stirring wand (large plastic spoon)

pH paper or pH meter

Safety goggles, gloves and lab coat

Acid Neutralization

While stirring, add acids to large amounts of an ice water solution of base such as sodium carbonate, calcium hydroxide, or sodium hydroxide for concentrated acids

When a pH of 5.0 to 9.0 is achieved, dispose of the solution into the sewer, followed by copious amounts of water

Base Neutralization

Add the base to a large vessel containing water. Slowly add a solution of HCl.

When a pH of 9.0 to 5.0 is achieved, dispose of solution into sewer system followed by copious amounts of water