

DRAIN DISPOSAL**Procedure: 8.02**
Version: 1.4**Created: 12/27/2012**
Revised: 8/31/2016**A. Purpose**

The drain disposal of chemical waste and related materials is managed by multiple agencies at the Federal, State, and municipal level of government. Due to these multiple overlapping regulations, it is necessary for the drain disposal of laboratory chemicals and wastes to be carefully regulated at a University level. This policy acts as the primary guidance document to allow for laboratories to safely and compliantly dispose of chemicals within the scope of waste regulations.

B. Applicability or Scope

All persons employed by or working on behalf of Columbia University who handle or use chemicals are included under the scope of this policy and must strictly adhere to these guidelines.

C. Definitions

1. US EPA: The United States Environmental Protection Agency. This agency is responsible for the creation and enforcement of regulations governing the management and disposal of hazardous waste.
2. NYCDEP: The New York City agency responsible for the delivery of fresh water and treatment of sewage discharge within Brooklyn, Queens, Manhattan, The Bronx, and Staten Island. This agency sets the guidelines for appropriate waste water discharge into sanitary sewer systems.
3. NYSDEC: The New York State Department of Environmental Conservation. This agency is the state level counterpart of the USEPA and acts to enforce state and federal laws regarding the protection of the environment.
4. Hazardous Chemicals/Wastes: For the purposes of this policy, a hazardous waste or chemical is any material that is characteristically flammable, corrosive, reactive, or toxic. For further information, please see the references section of this document.
5. Heavy Metals: Metals specifically listed by the US EPA and NYSDEC as Hazardous Waste. These are: arsenic, barium, cadmium, chromium, lead, mercury, selenium, and silver.

D. Responsibilities

1. All employees working for or on behalf of Columbia University and handling chemicals must:
 - a. Receive training to handle hazardous chemicals and the subsequently generated waste
 - i. Supervisors must ensure that their employees are trained to an appropriate standard as defined by the CU EH&S department for his or her assigned tasks and duties. Guidance and assistance in these matters can be obtained by contacting Environmental Health and Safety.
 - b. Familiarize themselves with the particular hazards of his or her assigned research area, be it a laboratory or other space where hazardous chemicals are used.
 - c. Inquire with Environmental Health and Safety with any and all questions regarding appropriate disposal of potentially hazardous wastes.

E. Procedures

Laboratory procedures must be conducted in accordance with Columbia University's policies to protect human health, the environment, and strictly adhere to all hazardous waste regulations. All hazardous wastes that are specifically listed or characteristically hazardous must be collected and disposed of properly. The NYCDEP prohibits the discharge of chemical wastes that are specifically listed or characteristically **toxic, corrosive, reactive, or flammable** into any sanitary sewer system within the 5 boroughs of New York City. Water authorities in other local municipalities have comparable regulations to limit the discharge of potentially hazardous materials into sanitary sewer systems. In order to comply

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with these regulations and prohibitions, Columbia University strictly regulates the drain disposal of all chemical wastes. It should be noted that Columbia University EH&S reserves the right to make final determination on the applicability of these regulations to any and all chemicals, chemical solutions, and other waste products to be disposed of via sanitary sewer drains.

1. Special Provisions for Empty Containers

- a. Empty containers not containing acutely toxic chemicals per 40 CFR 261.33 (Link in section K) may be rinsed and disposed of via laboratory drains
- b. For container with a volume of <1L
 - i. Fill the container completely with water
 - ii. Swirl the contents of the container to ensure it is rinsed thoroughly and carefully pour the resulting rinsate down the drain
 - iii. Repeat the process
 - iv. Black out all chemicals markings on the bottle. The container may now be used to collect compatible hazardous wastes or recycled through CU facilities.
- c. For containers with a volume of >1L
 - i. Fill the container completely with approximately 1L of water
 - ii. Swirl the contents of the container to ensure it is rinsed thoroughly and carefully pour the resulting rinsate down the drain
 - iii. Repeat the process
 - iv. Black out all chemicals markings on the bottle. The container may now be used to collect compatible hazardous wastes or recycled through CU facilities.

2. General Guidelines for Drain Disposal:

- a. All products for drain disposal must be in aqueous solutions. Sludges, powders, solids, and other non-aqueous solutions must be collected for proper disposal by EH&S personnel.
- b. All oils should be collected for proper disposal by EH&S personnel. Under no circumstances may oils be disposed of via drains.
- c. All solutions disposed of via sinks or other drains should fall within a pH range of 5 to 11. Solutions outside of this range must be collected for proper disposal by EH&S personnel.
- d. All solutions containing any quantity of heavy metals must be collected for proper disposal.
- e. Any and all questions regarding appropriate drain disposal of a material should be directed to EH&S personnel at hazmat@columbia.edu or by calling the EH&S line.

*For examples of permitted and prohibited materials for drain disposal, please see appendices 1 and 2 under the “appendices” section of this policy.

F. Emergency Contacts

1. CUMC EH&S: (212) 305-6780
2. Morningside EH&S: (212) 854-8749

G. Medical Surveillance

N/A

H. Record Keeping

N/A

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I. Appendices

1. Non-Hazardous Substances Permitted for Drain Disposal
 - a. Physiological saline and non-toxic salts in aqueous solution
 - b. Inorganic buffers (phosphate or bicarbonate based only)
 - c. Buffer solutions containing ethidium bromide that have been filtered, decontaminated, or destroyed using a method acceptable to EH&S (see [Ethidium Bromide: Safe Handling and Proper Disposal Policy](#) for accepted methods)
 - d. Non-Hazardous organic buffers at use concentrations (e.g., TRIS) that do not contain a dye or solvent
 - e. Sugar solutions
 - f. Liquid tissue culture media, fresh or spent supernatant, which has been rendered non-infectious
2. Examples of Hazardous Materials Not Suitable For Disposal
 - a. Ethanol: an ignitable/flammable chemical that meets the ignitability characteristic of hazardous waste as defined by EPA and NYSDEC, thus must be collected for hazardous waste disposal. As a flammable liquid, it is also forbidden from entering the public sewer (even with copious amount of water).
 - b. Acetone: see Ethanol
 - c. Methanol, Propanol and Butanol: see Ethanol
 - d. Chromerge: a sulfuric acid (e.g., corrosive) and chromium trioxide (e.g., toxic) solution use for cleaning laboratory glassware. This mixture is a corrosive, toxic hazardous waste. EH&S always recommends laboratories try alternative glass cleaning products (such as Alconox or NoChromix).
 - e. Dyes and Stains: the exact chemical contents of dyes and stains will determine whether they may be drain disposed. For example, Coomassie Blue and “Destain”, which contain methanol and acetic acid, would both be considered hazardous wastes and prohibited from drain disposal. EH&S recommends all dyes and stains be collected for proper waste disposal.
 - f. Ethidium Bromide Solution: due to its mutagenic properties it must be collected for hazardous waste disposal, unless filtered, decontaminated or destroyed, using methods approved by EH&S (see [Ethidium Bromide: Safe Handling and Proper Disposal Policy for accepted methods](#)).
 - g. Any material that meets and EPA definition of Ignitable, Corrosive, Reactive, or toxic is prohibited from sink disposal. Please note, the EPA, NYSDEC, and NYCDEP do not generally consider quantity or volume limits regarding the drain disposal of chemicals. Therefore even very small quantities of chemicals (ex. Liquid Scintillation Vials) must be collected for proper disposal by EH&S personnel.

J. Forms

N/A

K. References

[5L's of Waste Management](#)
[Waste Management and Recycling](#)
[40 CFR 261.33](#)

L. Acknowledgements

N/A