

Clinical Chemical Waste



Overview

Many pharmaceutical drugs and chemicals utilized in clinics are considered hazardous, and their disposal is regulated by the U.S. Environmental Protection Agency (EPA). The EPA's disposal requirements are more stringent than the standard "clear bag" (e.g., trash) or regulated medical waste "red bag" and sharps container options.

In general, drugs and chemical wastes from clinical areas must be collected and disposed of via Environmental Health and Safety (EHS) unless identified by EHS as non-hazardous and safe for alternative disposal. EHS provides chemical disposal at no charge to the clinic. Improperly disposed of drug and chemical wastes can result in penalties and fines from the EPA and may pollute the environment.

This EHS Update describes the most appropriate method of disposal for the different categories and types of drug and chemical wastes generated by Weill Cornell Medicine (WCM) clinics.

Applicability

This update applies to all WCM physicians, clinical staff, medical students, and technicians who administer pharmaceutical drugs and chemicals; and manage the associated wastes.

This update **does not** apply to pharmaceutical chemical wastes generated in New York-Presbyterian Hospital (NYP). NYP clinical areas must manage wastes as established in the NYP Safety Manual. Additionally, this update **does not** apply to [chemotherapeutic wastes](#) or [DEA-controlled substances](#), and there are separate updates available for these wastes.

Responsibilities

- **Physicians, Clinical Staff, Medical Students, and Technicians** who administer, dispose, or otherwise manage pharmaceutical drugs and chemicals must ensure that all associated wastes are managed and disposed of as required by this update.
- **EHS** acts as a resource to WCM personnel, providing technical assistance and training to clinical areas on pharmaceutical drug and chemical waste management. Upon request, EHS reviews specific clinical chemical wastes to identify appropriate disposal methods or approve alternative disposal methods. EHS also coordinates the collection and disposal of chemical wastes, as defined in this update.

Definitions

Acutely toxic chemicals are chemicals that the EPA has determined to be acutely toxic, and even empty containers must be disposed of as hazardous waste via EHS.

Examples of acutely toxic chemicals found in clinics are below; a [full list](#) is available on the EHS website.

- Arsenic trioxide (Trisenox)
- Phenteramine
- Epinephrine medications (excluding epinephrine hydrochloride):
 - Adrenalin; EpiPen; Eppy/N; Epifrin; Epinal; Anaphylaxis kit
 - Epinephrine (inhalants, injectables, kits)
 - Racepinephrine
 - Racord
 - Primatene aerosol inhaler
- Physostigmine salicylate (Antilirium)
- Warfarin and salts, >0.3% (Coumadin)
- Nitroglycerine
- Nicotine and nicotine salts (Nicotine patches; Habitrol; Nicoderm; Nicorette; Nicotrol; Tetrahydronicotyrine)

Clear bag wastes are regular trash materials such as standard refuse, non-contaminated gloves and gowns, empty chemical containers (excluding empty acutely toxic chemical containers), etc. which are destined for disposal in a landfill as untreated wastes.



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Clinical drug and chemical wastes are chemicals or pharmaceutical drugs utilized in clinical areas that are hazardous and require more stringent disposal via EHS. Unless identified as a non-hazardous chemical by EHS, chemicals and pharmaceutical drugs are presumed to be hazardous, and must be managed in compliance with this Update and disposed of via EHS. Pharmaceutical drugs may not be disposed of down the drain or flushed down a toilet. Separate disposal procedures for [chemotherapeutic wastes](#) or [DEA-controlled substances](#) are available on the EHS website.

Non-hazardous chemical wastes are chemicals identified by EHS to be non-hazardous and acceptable for disposal via clear bag wastes, chemical sharps waste, or drain disposal. Disposal method will depend on the nature of the waste (e.g., gloves, vials, non-hazardous chemicals, buffers, syringes, needles) and other potential contaminants (e.g., human blood, body fluids). for clarification on specific waste types.

Red bag wastes are non-sharps regulated medical wastes (e.g., blood-contaminated gloves, pads, gowns) collected into red bags that are destined for disposal via autoclaving then sent to the landfill without treatment or destruction of chemical wastes.

Sharps wastes are sharps regulated medical wastes collected into sharps containers that are destined for disposal via autoclaving then sent to the landfill without treatment or destruction of chemical wastes.

Drug Enforcement Administration (DEA) controlled substances are certain chemicals used to make drugs that are classified into five (5) distinct categories or schedules, depending upon the drug's acceptable medical use and the drug's abuse or dependency potential. The abuse rate is a determinate factor in the scheduling of the drug; for example, Schedule I drugs have a high potential for abuse and the potential to create severe psychological and/or physical dependence. Disposal of DEA substances is performed through a licensed vendor; EHS must be contacted for disposal for DEA controlled substance. Disposal procedures for [DEA-controlled substances](#) are available on the EHS website.

NOTE: Please refer to [5.2 Waste Disposal Procedures](#) for more information on the disposal of specific waste types.

Procedure

REVERSE DISTRIBUTION

When suitable, Non-expired or unwanted pharmaceutical drugs acquired through either a private distributor or the NYP Pharmacy should be returned via a reverse distribution program. Refer to the reverse distributor's guidelines for specific instructions, and contact EHS for assistance as necessary.

EMPTY CONTAINERS AND VIALS

A container is considered "empty" if it contains less than or equal to 3 percent by weight of its total capacity (i.e., residual amounts). Containers may include bottles, vials, IV bags, etc.

- **Empty acutely toxic chemical containers** must be managed as hazardous chemical waste and collected for disposal via EHS. Please submit a chemical waste request via [Salute](#) to dispose of containers that contained acutely chemical containers.
- **Other empty chemical containers** are considered non-hazardous chemical wastes. Limited quantities of small vials may be discarded in sharps containers or otherwise managed as "clear bag" wastes (i.e., regular trash). Glass containers must be placed in a cardboard box prior to clear bag disposal to prevent breakage. Containers that have come into contact with blood or other biological wastes must be managed as regulated medical wastes.

NON-HAZARDOUS CHEMICAL WASTES

For the purpose of this update, non-hazardous chemical wastes from clinical areas include:

- Syringes containing only non-hazardous chemicals as identified below or any pharmaceutical drug which has been administered to a patient may be discarded in sharps containers.
- Buffers, saline solutions, and standard IV bags containing non-hazardous chemicals such as sodium chloride, potassium chloride, or glucose solutions to which drugs have not been added. A full listing of non-hazardous chemicals is available in the [EHS Update – Drain and Trash Disposal of Chemicals](#) on EHS website.
 - Small containers (<50ml) may be discarded in a sharps container.
 - Aqueous solutions may be disposed via drain disposal.
 - To request alternate disposal methods, please contact EHS.



HAZARDOUS CLINICAL CHEMICAL WASTES

All other clinical drugs and chemical wastes must be collected and disposed of via EHS when in the following forms. EHS provides this service free of charge.

- Pharmaceutical drugs including liquids, creams, transdermal patches, inhalers, and solids such as powders, pills and capsules.
- IV bags containing drugs or other hazardous chemicals.
- Syringes containing drugs or other hazardous chemicals that have not been administered.
- Unused disinfectants and sterilizing chemicals (e.g., alcohol, bleach)
- Any other chemical not specifically identified as a non-hazardous chemical waste.
- Spill cleanup materials from any of these items.
- DEA-controlled substances are disposed of with specific procedures. Please refer to our [DEA Controlled Substance Update](#).

MANAGING HAZARDOUS CLINICAL CHEMICAL WASTES

Manage and dispose of hazardous clinical drug and chemical wastes as follows:

- CONTAINERIZE** – Collect wastes into hard-walled containers with screw-top, sealable lids. Original manufacturer containers do not need to be re-containerized.
- LABEL** – Label containers with a [Hazardous Waste Label](#) (available from EHS) with the name of the pharmaceutical agent(s) enclosed. Denote “SHARPS” on the label if syringes or other sharp wastes are inside the container.
- CLOSE AND PROTECT** – Close containers when not in use and protect from accidental exposure to employees and patients.
- STORE** – Store the container in a [posted Chemical Waste Satellite Accumulation Area](#) with secondary containment (e.g., tub or bin) to contain spills. Signs to designate areas are available from EHS.
- REQUEST DISPOSAL via EHS** – Submit an on-line chemical waste request via [Salute](#) to have these wastes disposed of via EHS.

References

[EHS Manual – Waste Disposal Procedures](#)

[EHS Update – Drain and Trash Disposal of Chemicals](#)

[5.2 Waste Disposal Procedures](#)

[Salute.com](#)

“Managing Pharmaceutical Hazardous Waste in the Hospital” by Environmental Health & Engineering.

NYS - NYSDEC 6 NYCRR Parts 370 through 374 and 376 – Hazardous Waste Disposal.

USEPA - 40 CFR 262 Protection of Environment, Standards Applicable to Generators of Hazardous Waste.

Hazardous Waste Labels are available on the EHS website.

Chemical Waste Satellite Accumulation Area

Waste Storage & Removal

- Containerize**
 - Store all waste in a sealed compatible container. Keep containers closed at all times, except when adding waste. Use vented caps when needed.
 - Use secondary containment to prevent spills and to segregate incompatible waste streams.
 - Maintain waste in the Chemical Waste Satellite Accumulation Area until collection.
- Label**
 - Use the hazardous waste labels provided by EHS to mark all containers. Do not date the containers.
 - Indicate all hazard characteristics and write all chemical constituents and approximate percentages. Do not use abbreviations.
- Contact EHS**
 - Once the containers are full, request pickup by completing a Chemical Collection Request Form. Visit <https://ehs.weill.cornell.edu/chemicalcollection> or scan the QR Code.

Unacceptable Storage/Disposal

- Never store more than 1 quart of liquid acutely hazardous waste (P-listed), or more than 1 kg of solid acutely hazardous waste.
- Never accumulate more than 55 gallons of hazardous non-acute waste.
- Never use evaporation or dilution as a treatment method.
- Never dispose of waste in the sink or trash unless listed in the approved non-hazardous chemical list on the EHS website.

For more information, please refer to EHS Program Manual 5.2 - Waste Disposal Procedures

Laboratory Staff: Post at or near the point of waste generation- 40 CFR 262.15

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Example of chemical waste properly containerized and labeled

Scan code for Chemical Collection Request Form

Chemical Waste Satellite Accumulation Area signage.