Overview
Many pharmaceutical drugs and chemicals utilized in clinics are considered hazardous and regulated by the U.S. Environmental Protection Agency (EPA) when disposed. 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 via Environmental Health and Safety (EHS) unless identified by EHS as non-hazardous and safe for alternative disposal. Chemical disposal via EHS is provided 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 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 NewYork-Presbyterian Hospital (NYP). NYP clinical areas must manage wastes in accordance with the NYP Safety Manual. Additionally, this Update does not apply to chemotherapeutic wastes or DEA-controlled substances. Separate Updates are 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 in accordance with 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 identified 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 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)
- Physostigmine salicylate (antilirium)
- Nitroglycerine
- Phenteramine
- Warfarin and salts, >0.3% (coumadin)
- Epinephrine (excluding epinephrine hydrochloride): (adrenalin; EpiPen; Epby/N; Epifrin; Epinal; Anaphalaxis kit; Epinephrine inhalants, injectibles, kits; Racepinephrine; Racord; Primatene aerosol inhaler
- Nicotine and nicotine salts (Nicotine patches; Habitrol; Nicoderm; Nicorette; Nicotrol; Tetrahydronicotyrine)

Clear bag wastes are normal 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.

Clinical drug and chemical wastes are chemicals or pharmaceutical drugs utilized in clinical areas which 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 accordance with this Update and disposed via EHS. Chemotherapeutic drugs and DEA-controlled substances are not included; separate disposal procedures 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, red bag wastes, sharps waste or drain disposal depending on the nature of the waste (e.g., syringes, needles, gloves, vials) and other potential contaminates (e.g., human blood, body fluids).
Red bag wastes are non-sharps regulated medical wastes (e.g. blood-contaminated gloves, pads, gowns) collected into red bags which are destined for disposal via autoclaving then landfill without treatment or destruction of chemical wastes.

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

Procedure

REVERSE DISTRIBUTION
When suitable, 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 a hazardous chemical waste and collected for disposal via EHS.
- Other empty chemical containers are considered non-hazardous chemical wastes. Limited quantities of small vials may be discarded in sharps containers; otherwise manage as “clear bag” wastes (i.e., normal trash). Glass containers must be placed in a cardboard box prior to clear bag disposal to prevent breakage. Containers which 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 (identified below) or any pharmaceutical drug which have 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 containers.
  - Aqueous solutions may be disposed via drain disposal.
  - Otherwise dispose via EHS or contact EHS to request an alternate disposal method.

HAZARDOUS CLINICAL CHEMICAL WASTES
All other clinical drugs and chemical wastes must be collected and disposed via EHS when in the following forms. This disposal service is provided by EHS at no additional charge to the clinic.

- Pharmaceutical drugs including liquids, creams, trans-dermal 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 which 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.

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

1. CONTAINERIZE – Collect wastes into hard-walled containers with screw-top, sealable lids. Original manufacturer containers do not need to be re-containerized.
2. LABEL – Label containers with a yellow 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.
3. **CLOSE AND PROTECT** – Close containers when not in use and protect from accidental exposure to employees and patients.

4. **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 area available from EHS.

5. **REQUEST DISPOSAL via EHS** – Submit an on-line [Chemical Collection Request Form](#) via the EHS website to have these wastes disposed via EHS.

**References**

- EHS Manual – Waste Disposal Procedures
- EHS Update – Drain and Trash Disposal of Chemicals
- "Managing Pharmaceutical Hazardous Waste in the Hospital" by Environmental Health & Engineering.
- NYS - NYSDEC 6 NYCRR Parts 370 through 374 and 376 – Hazardous Waste Disposal.