Clinical Chemotherapeutic Waste

Overview
Chemotherapeutic agents are toxic chemicals and certain agents are regulated by the United States Environmental Protection Agency (EPA) as a hazardous waste when disposed. EPA regulations also consider materials used in administering EPA-regulated chemotherapeutic agents as potential hazardous wastes (e.g., syringes; tubing and IV bags; spill clean-up). Chemotherapeutic wastes must be managed in accordance with this Update to ensure proper handling, storage, and disposal. Chemotherapeutic wastes are separated into two categories:

- EPA-regulated chemotherapeutic wastes disposed via Environmental Health and Safety; or
- All other chemotherapeutic wastes disposed via Stericycle’s chemotherapeutic waste program.

Applicability
This Update applies to the Weill Cornell Medicine (WCM) physicians, clinical staff, medical students and technicians who administer chemotherapeutic agents and manage the associated wastes. The disposal procedures outlined in this Update are in conjunction with the chemotherapeutic waste disposal services provided by Stericycle. If a WCM clinic intends to utilize another regulated medical waste or chemotherapeutic waste disposal vendor, contact Environmental Health and Safety (EHS) to verify alternate disposal procedures. This Update does not apply to chemotherapeutic wastes generated in NewYork Presbyterian Hospital (NYP). NYP clinical areas must manage wastes in accordance with the NYP Safety Manual.

Definitions
Chemotherapeutic sharps wastes are items which are contaminated with a chemotherapeutic agent and can cut or have the potential to cut, puncture, scratch or abrade skin (e.g., needles, pipettes, razor blades, glass bottles, vials).

Chemotherapeutic clinical trial samples must be assumed to contain the chemotherapeutic agent being studied and disposed in accordance with this Update.

EPA-regulated chemotherapeutic agents are a group of chemotherapeutic agents which the EPA regulates to more stringent disposal requirements and which cannot be disposed of via Stericycle.

Responsibilities
Physicians, Clinical Staff, Medical Students and Technicians who administer chemotherapeutic agents must ensure that all associated wastes are handled, stored, managed and disposed in accordance with this Update. Personnel packaging, shipping, or signing Medical Waste Tracking Forms for chemotherapeutic waste shipments must complete Regulated Medical Waste Shipper training with EHS.

Environmental Health and Safety (EHS) acts as a resource to WCM personnel, providing technical assistance and guidance on chemotherapeutic waste management. EHS provides Regulated Medical Waste Shipper training which includes chemotherapeutic waste shipments upon request, and coordinates the disposal of EPA-regulated chemotherapeutic wastes.

Procedure

EPA-REGULATED CHEMOTHERAPEUTIC AGENTS LIST
The EPA regulates the disposal of the chemotherapeutic agents listed in the table below as toxic hazardous waste. Refer to the procedures below to determine if the chemotherapy waste must be disposed as either:

- EPA-regulated chemotherapeutic wastes disposed via EHS; or
- All other chemotherapeutic wastes disposed via Stericycle’s chemotherapeutic waste program.
CONTINUED: Clinical Chemotherapeutic Waste

<table>
<thead>
<tr>
<th>EPA-Regulated Chemotherapy Agent</th>
<th>C.A.S. #</th>
<th>Brand Name(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arsenic Trioxide (see comment below)</td>
<td>1327-53-3</td>
<td>Trisenox</td>
</tr>
<tr>
<td>Azaserine</td>
<td>115-02-6</td>
<td></td>
</tr>
<tr>
<td>Chlorambucil</td>
<td>305-03-3</td>
<td>Leukeran</td>
</tr>
<tr>
<td>Chloronaphazine</td>
<td>494-03-1</td>
<td>Discontinued Use</td>
</tr>
<tr>
<td>Cyclophosphamide</td>
<td>50-18-0</td>
<td>Cytoxan; Neosar</td>
</tr>
<tr>
<td>Daunomycin</td>
<td>20830-81-3</td>
<td>Cerubidine; Daunorubicine; Daunoxome; Rubidomycin</td>
</tr>
<tr>
<td>Ethyl Carbamate</td>
<td>51-79-6</td>
<td>Urethane</td>
</tr>
<tr>
<td>Melphalan</td>
<td>148-82-3</td>
<td>Alkeran; L-PAM</td>
</tr>
<tr>
<td>3-Methylchloranthrene</td>
<td>56-49-5</td>
<td></td>
</tr>
<tr>
<td>Mitomycin C</td>
<td>50-07-7</td>
<td>Mutamycin; Mitozytrex</td>
</tr>
<tr>
<td>Streptozotocin</td>
<td>18883-66-4</td>
<td>Zanosar</td>
</tr>
<tr>
<td>Uracil Mustard</td>
<td>66-75-1</td>
<td></td>
</tr>
</tbody>
</table>

**Note:** Arsenic trioxide is regulated as an acutely toxic hazardous waste by the EPA and has more stringent disposal requirements than those outlined in this Update. Contact EHS if arsenic trioxide is utilized in the clinic for supplemental disposal procedures.

**EPA-REGULATED CHEMOTHERAPEUTIC WASTE MANAGED VIA EHS**

EPA-regulated chemotherapeutic agents listed in the table above must be disposed via EHS when in the following forms:

- Full and partially-full bottles, vials, IV bags, or other containers with EPA-regulated chemotherapeutic agents
- Syringes containing EPA-regulated chemotherapeutic agents which have not been administered to a patient
- Spill clean-up wastes of an EPA-regulated chemotherapeutic agent

Manage and dispose of EPA-regulated chemotherapeutic wastes in the forms above as follows:

1. CONTAINERIZE – Collect wastes into hard-walled containers with screw-top, sealable lids. Syringes must be placed into separate sharps containers. Original bottles and vials with sealable lids or caps do not have to be re-containerized.
2. LABEL – Label each container with a yellow Hazardous Waste Label (available from EHS) with the name of the EPA-regulated chemotherapeutic agent(s) utilized. 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 Chemical Waste Satellite Accumulation Area with secondary containment (e.g., tub or bin) to contain spills.
5. REQUEST DISPOSAL via EHS – Submit an on-line Chemical Collection Request Form available on the EHS website to have these EPA-regulated chemotherapeutic wastes disposed of via EHS.

**ALL OTHER CHEMOTHERAPEUTIC WASTE MANAGED VIA STERICYCLE**

All other chemotherapeutic wastes not disposed via EHS must be disposed via Stericycle’s chemotherapeutic waste disposal program including the following wastes:

- Empty or residue-containing bottles, vials, IV bags, or other containers with EPA-regulated chemotherapeutic agents.
- Syringes containing EPA-regulated chemotherapeutic agents which have been administered to a patient.
- Any waste associated with chemotherapeutic agents not regulated by the EPA (i.e., chemotherapeutic agents not listed in table).

Manage and dispose of these wastes as follows:

1. CONTAINERIZE –
   - Chemo Sharps Waste Containers: Collect chemo sharps wastes into yellow chemo sharps containers.
   - Yellow Chemo Waste Bags: Non-sharps chemo waste must be collected in yellow chemo waste bags.
2. CONTAINER LABELING – Waste containers and bags must be labeled or marked with:
   - Words “Chemotherapy Waste” or “Chemo”

**EXAMPLE CONTAINERS:** Sharps containers (left) are manufactured by Tyco Healthcare and available from Stericycle, Lab Safety Supply, and other medical suppliers. Yellow chemotherapeutic waste bags (right) are available from Stericycle.
CONTINUED: Clinical Chemotherapeutic Waste

- Biohazard symbol or the words “Biohazard”
- Name and address of the facility / clinic

3. **CLOSE AND PROTECT** – Close sharps containers and chemotherapy waste bags and protect against accidental exposure. Remove when full. Chemo waste bags must be removed at least each evening.

4. **COLLECTION AND DISPOSAL** – Clinics in the Weill Greenberg Center must contact Housekeeping Services (746-2288) to request chemo waste collections. All other off-site clinical areas must self-manage their chemo wastes with Stericycle as specified in Steps 5-9.

5. **PACKAGE** – Sealed chemo sharps container and chemo waste bags must be placed into Stericycle fiberboard boxes for regulated medical waste which are lined with a yellow chemo waste bag.

6. **PACKAGE LABELING** – Stericycle regulated medical waste fiberboard boxes must be labeled:
   - “Incinerate Only” sticker.
   - Check “Chemotherapeutic” and “Incineration Only” on side of box.
   - Stericycle regulated medical waste Shipper Label. Write the date when the waste is shipped.

7. **STORE** – Store the box in a secured regulated medical waste storage area.

8. **TRAIN PERSONNEL** – Regulated Medical Waste Shipper training must be completed prior to shipping waste or signing Medical Waste Tracking Forms.

**References**

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

Stericycle® - “Managing Antineoplastic (Chemotherapy) Waste in New York State”, May 2004