

Management and Disposal Guidelines for U-Listed Antineoplastic (Chemotherapy) Wastes

Hospitals, pharmacies, and other healthcare providers use a variety of chemotherapy agents that contain hazardous chemicals, including those that are considered toxic or U-listed hazardous waste when they become a “waste.” Unused or expired U-listed chemicals are managed under the New Hampshire Hazardous Waste Rules (Env-Wm 100-1100).

There are seven chemotherapy agents that are U-listed. (The complete list of U-listed chemicals can be found at Env-Wm 402.05.)

- Chlorambucil U035
- Cyclophosphamide U058
- Daunomycin U059
- Melphalan U150
- Mitomycin C U010
- Streptozotocin U206
- Uracil Mustard U237



Management Example: U-listed Chemicals with Expired Shelf Lives

Occasionally, some products’ shelf lives expire. The facility should:

1. Return the product to a distribution company or manufacturer through a “take-back” program that will reuse the product. The product is not considered a hazardous waste until it cannot be redistributed or reused. Review the facility’s group purchasing organization contract for further information. Some of these services are included in the contract.
2. Create an inventory control program to limit the volume of products that expire before use. Resources spent on the management of expired products are resources lost.
3. Example, if expired chlorambucil cannot be redistributed or reused, it must be managed as a hazardous waste. The waste code on the manifest should be U035. The amount that cannot be returned will count toward the hazardous waste generation status (i.e. FQG or SQG).

Management Example: Empty U-listed Containers [Defined in Env-Wm 401.03(h) and (i)].

Containers and inner liners that have held U-listed hazardous waste are deemed empty when:

1. All the wastes have been removed that can be removed, **and**
2. No more than one inch of residue remains on the bottom of the container or inner liner, or
3. No more than 3 percent by weight of the total capacity of the container remains in the container or inner liner if the container is less than or equal to 110 gallons in size.
4. Any residues removed from the empty container are managed to regulation under the Hazardous Waste Rules.

Antineoplastic wastes are commonly managed as two separate waste streams – trace and bulk chemotherapy wastes.

Trace Chemotherapy Waste

Trace chemotherapy waste may or may not meet the definition of infectious waste; however it is always considered “RCRA” empty. Therefore, it is never regulated as a hazardous waste and it also may not be regulated as an infectious waste. Because of this, trace chemotherapy waste falls out of strict regulation and can potentially be disposed of as a solid waste. However, due to the cytotoxic nature of the drugs the waste may pose a threat to human and environmental health. Therefore, due to liability concerns, most healthcare facilities choose to incinerate trace chemotherapy wastes as if it were infectious, as opposed to disposing of it as a solid waste. Infectious waste is managed under the New Hampshire Solid Waste Rules (Env-Wm 2604).

When trace chemotherapy waste is managed with other infectious waste, the material may be subject to disposal methods that do not destroy the cytotoxic nature of the drug residue (e.g. autoclave, microwave, chemical rendering, etc.). Therefore many healthcare facilities separate trace chemotherapy waste from infectious waste (red bag) to ensure that the trace chemotherapy waste is incinerated which presumably will occur at a high enough temperature and for a long enough period of time to destroy the cytotoxic chemical.

Guidelines on Trace Chemotherapy Waste

Chemo waste, containers – Empty vials, syringes, IV bags, etc. that held antineoplastics must be empty in order to be considered trace chemotherapy waste. Place these empty containers into the yellow waste container to be incinerated.

Chemo waste, soft – Unless overtly contaminated, gowns, goggles, gloves, tubing and wipes used with antineoplastics should be placed in the yellow waste container to be incinerated.

Chemo waste, sharps – Needles used with antineoplastics must be placed in a designated sharps container and managed as a regulated infectious waste.

Bulk Chemotherapy Wastes

Chemotherapy wastes that are not “RCRA” empty would not meet the definition of trace and therefore in some cases need to be handled as a hazardous waste. Many chemotherapy agents are not listed as hazardous wastes but it is recommended that they are handled similarly to increase worker safety and decrease liability.

Guidelines on Bulk Chemotherapy Waste

Containers holding liquids – Excluding residual amounts, a container, which holds any amount of free liquid, must be managed as a hazardous waste. Place the entire container (vial, syringe, IV bag, etc.) into the bulk hazardous waste container for proper disposal.

Overtly contaminated garments and spill cleanup material – Gowns, goggles, gloves or other materials that are contaminated with antineoplastics found during routine administration or preparation must be managed as a hazardous waste. Any spill cleanup material (rags, wipes, towels, pads, etc.) contaminated with these concentrated antineoplastics must be managed as a hazardous waste. Place wastes into the bulk hazardous waste container for proper disposal.

Management Example: Unused Chemotherapy Formulations

Sometimes the chemo IV bag has been hung and is not completely used. The facility must manage the waste in a manner that is least harmful to the provider and patient.

1. If the chemo IV bag can be separated from the patient without exposing the sharp to the patient or the employee, then remove and dispose of the IV bag as a hazardous waste.
2. If the chemo IV bag cannot be removed safely, then dispose of it as a hazardous waste by a vendor/transporter that can dispose of both hazardous and infectious waste.
3. Disposal of bulk antineoplastic or chemotherapy formulation wastes down the drain, in the solid waste, in the yellow or red infectious waste, or for incineration in a medical or municipal waste incinerator is prohibited.

Pollution Prevention at Healthcare Facilities

Since 1998, the Department of Environmental Services' New Hampshire Pollution Prevention Program has undertaken a project promoting pollution prevention opportunities at healthcare facilities. This on-going project involves providing on-site assistance at participating facilities, setting up an infrastructure to promote continuous environmental improvement, and providing outreach and training activities to New Hampshire healthcare facilities.

For further information on Pollution Prevention at Healthcare Facilities, contact Sara Johnson, DES, at (800) 273-9469 or sjohnson@des.state.nh.us.

For more information, contact:

Hazardous Waste Compliance Section	toll free (866) – HAZWAST
Infectious Waste	(603) 271-5185

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