

## Guidance for Disposal of Items in Ultra Low Temperature (ULT) Freezers and other Freezers

This document describes procedures to help laboratories clean out and dispose of unused or unwanted items contained in ULT freezers and other freezers and refrigerators. All items removed from any freezer or refrigerator must be carefully evaluated to ensure that they are disposed of properly. For most biological kits and biological samples there is a consolidation procedure described below that can be implemented by laboratory personnel and will greatly reduce the volume of waste and the amount of hazardous waste tags that need to be completed by the research group. For chemical reagents, EH&S has a segregation procedure that will reduce the amount of hazardous waste tags that need to be completed; this also described below.

### For biohazards, infectious or potentially infectious samples:

Any material that can be considered biohazardous, infectious or potentially infectious, or is biomedically appearing must be disposed of through the biowaste program. This includes, but not limited to human and animal tissue culture and cells, tissue, blood and blood products, and bone. These items must be autoclaved or chemically disinfected and have a certified non-biohazardous waste tag completed according to the [Hazardous Waste Generator's Guide](#).

If you have animal carcasses and/or parts to dispose of please keep these separate and contact EH&S for disposal procedures.

### For Select Agents and Toxins:

The term "Select Agents" refers to a collection of designated infectious agents and toxins that, by their nature, have the potential to pose a severe threat to public, animal or plant health; this threat has resulted in the creation of very strict regulations that impose fines and possible imprisonment for non-compliance. These regulations only came into effect June 2002, so it is possible that you could find a select agent while you are cleaning out a freezer. Please refer to the [List of Select Agents and Toxins](#) on the Federal Select Agent website to determine if you have materials that may be a select agent or a select agent toxin.

**If you think that you may have a select agent or a select agent toxin:  
DO NOT THROW AWAY OR PROCESS THROUGH BIOWASTE OR HAZARDOUS  
WASTE PROGRAMS**

- Secure material in a locked freezer or other container that has restricted access
- Contact EH&S immediately for assistance

### For biological kits and samples (non-infectious/non-biohazardous):

Usually, the majority of contents stored in freezers and ULT freezers are not hazardous materials, and consist of such items as: polymerase chain reaction (PCR) kits and other kits, biological samples, nucleic acids, peptides, enzymes, etc., that are in an aqueous pH buffered solution and may also contain some non-hazardous salts. EH&S will still collect these types of waste through the hazardous waste program; but in the interest of reducing the number of waste tags that need to be completed, laboratory personnel should bag these wastes together and fill out a summarized waste tag for disposal. Here is a description of how to do it:

The kits should be opened and the small bottles (<100ml) or aliquot tubes removed from their packaging materials and bagged with other similar items into a sturdy, clear, medium sized plastic bag for disposal (EH&S will provide bags for this – call 303-492-7845 or email [hazmat@colorado.edu](mailto:hazmat@colorado.edu), no trash bags or large bags will be allowed). This will greatly reduce the volume of waste to be disposed of, and also allows for the recycling of the cardboard and paperboard packaging materials.

Here is what can be bagged up for disposal:

Aqueous solutions of:

- pH buffered solutions, BICINE, EDTA, HEPES, MES, MOPS, PBS, PIPES, TRIS, etc.
- dyes, stains
- growth media, broths, bovine serum albumin, sugars
- nucleic acids, peptides, proteins, amino acids, enzymes, vitamins
- ammonium acetate, calcium acetate, lithium acetate, magnesium acetate, potassium acetate, sodium acetate
- ammonium carbonate, calcium carbonate, lithium carbonate, potassium carbonate, sodium carbonate
- ammonium chloride, calcium chloride, cesium chloride, lithium chloride, magnesium chloride, potassium chloride, sodium chloride

Once a bag has been filled with these non-hazardous items, fill out and attach a hazardous waste tag to each bag. Fill out the hazardous waste tag as you normally would, but under the “container contents” section just list a general description of the items contained in each bag. Don’t worry about percentages or total quantity of solids or liquids – EH&S will complete any additional information that is needed for each tag when the waste is picked up. Call 303-492-7845 or email [hazmat@colorado.edu](mailto:hazmat@colorado.edu) and let us know when the items are ready for pickup.

Here is a list of what CANNOT be bagged up for disposal: (all of these will need separate disposal and segregation by EH&S – follow instructions for chemical reagents below)

- Radioactive materials
- Mercury or mercury compounds
- Any of these metals: (or compounds of)
  - Arsenic, Barium, Cadmium, Chromium, Copper, Lead, Molybdenum, Nickel, Selenium, Silver, Zinc
- Flammable liquids (ethanol, methanol, ethers, etc.)
- Corrosive liquids (ph <3 or >11)
- Halogenated solvents (chloroform, methylene chloride, etc.)
- Oxidizers (hydrogen peroxide, nitrates, chlorates, permanganates, etc.)
- Reactive chemicals (water reactive, pyrophoric, cyanides, sulfides, azides, picric acid, etc.)
- Extremely toxic compounds (acrolein, bromine, carbon disulfide, osmium tetroxide, etc.)
- Toxins from living sources (venoms, actinomycin D, mytomycin C, amanitin, etc.)
- This list is not all inclusive, if in doubt keep the items separate for EH&S to consider

### For chemical reagents:

Due to the complexities of disposing chemical reagents, EH&S will need to schedule a time with each lab to perform a segregation process for chemicals to be disposed of. For large volumes of chemical wastes please contact EH&S **BEFORE** you complete hazardous waste tags. EH&S has a segregation process for large quantities of chemical reagents; this segregation process will ease the process of chemical disposal and greatly reduce the amount of waste tags that need to be completed.

Remove the chemical reagents from the freezer and store them in a well ventilated area, in secondary containment, and with other compatible chemicals. Call EH&S at 303-492-7845 or email [hazmat@colorado.edu](mailto:hazmat@colorado.edu) to schedule a time to have the chemical reagents segregated for disposal. EH&S will segregate the chemicals into groups based on how they will be handled for disposal. Once the chemicals have been grouped together, the laboratory personnel will need to complete hazardous waste tags listing just the chemical names for each group of chemicals (one tag per group rather than per bottle). Don't worry about percentages or total quantity of solids or liquids – EH&S will complete any additional information that is needed for each tag when the waste is picked up. Call 303-492-7845 or email [hazmat@colorado.edu](mailto:hazmat@colorado.edu) and let us know when the items are ready for pickup.