

Biological waste

Biological waste is any waste that is living or was once living that was used in research. This includes waste equipment and materials such as pipettes, needles, and glassware that is used in biological research.

What do you do with biological waste?

In Massachusetts, all biological research waste (noninfectious and infectious) must be deactivated by autoclaving or chemically treated before being disposed of as Municipal Solid Waste (MSW).

How do you deactivate biological waste?

- Solid biological wastes are typically deactivated by autoclaving
- Liquid wastes are deactivated either by autoclaving or chemical disinfection
- Biologically contaminated sharps and animal carcasses, as well as human blood samples, are shipped off-site to be deactivated by incineration.

Autoclave

An autoclave uses pressurized steam to decontaminate infectious waste. Laboratory autoclaves normally operate at a temperature of 250° F (121° C), a pressure of 15 pounds per square inch (psi) and a minimum cycle time of 60 minutes. The effectiveness of an autoclave depends on the time, temperature, and direct steam contact with infectious agents. Therefore, we recommend that bags are opened for best steam penetration during the autoclave run. In order to ensure effective disinfection, autoclaves must be validated by spore testing monthly and inspected yearly by a professional. Autoclave logs are required by the Massachusetts Department of Public Health.

What can be autoclaved?

- Cultures and stocks of noninfectious and infectious biological waste;
- Human, animal, and plant cell lines;
- Discarded materials contaminated with biological materials;
- Preparations made from genetically altered living organisms and their products.

Chemical Deactivation

Liquid cultures and some solids may be deactivated by a chemical disinfectant such as chlorine or iodophor compounds. To chemically deactivate, the disinfectant is added to the liquid to the appropriate concentration. The concentration required will depend on the disinfectant and the amount of liquid waste (i.e., for bleach, the final concentration should be 10% volume by volume). Let sit for thirty minutes then pour down the drain.

Incineration

Animal carcasses, human tissues, blood samples, and sharps (needles, syringes, scalpels, etc., which are collected in red puncture proof sharps containers) are packaged in double biohazard bags and placed in cardboard boxes for off-site incineration. Please contact EH&S for packaging materials and waste pick-up requests via our [web site](#) or by calling 413-545-2682.

How should I collect and dispose of waste after decontamination?

Liquid biological waste may be collected in containers for autoclaving or chemical disinfection. Autoclaved or chemically disinfected liquid biological wastes can be disposed via the laboratory drainage system. (Do not pour melted agar into sink. Allow it to cool and solidify for disposal as a solid waste.)

Solid biological waste procedures:

1. Collect the biological waste in clear, ASTM approved autoclave bags (no biohazard symbols).
2. All biological waste bags should be held in secondary biohazard-labeled containers with a lid.
3. Before autoclaving, remove all biohazard labels. Ensure that words like “pathogenic,” “infectious” or “biohazardous” have been removed from all autoclaved materials.
4. Autoclave and cool the waste.
5. Place the autoclave bag into an opaque polypropylene trash bag. Place the bag in an approved location/dumpster.