AUTOCLAVED WASTE

What is an autoclave?
An autoclave, or steam sterilizer, is an insulated pressure chamber in which saturated steam is used to elevate the temperature. Autoclaves are found in research, diagnostic and microbiology laboratories, health centers and other places that require high-level disinfection.

How does an autoclave work?
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 30 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. Other factors that influence treatment efficiency include: waste destiny, physical state, size, and organic content.

How do I use the autoclave?
Autoclaves come in many different styles. Therefore, always follow the manufacturer's instructions when using the autoclave.

What can be autoclaved?
In Massachusetts, all biological research material noninfectious and infectious, must be deactivated by autoclave or chemical treatment before being disposed as Municipal Solid Waste (MSW). Massachusetts currently prohibits medical sharps (needles, syringes, etc.) and research animal carcasses from entering the MSW stream. These items must be removed by an outside contractor according to their specifications.

The following biological waste products may be autoclaved and disposed of as MSW:

- Cultures and stocks of noninfectious and infectious biological waste;
- Human blood waste and human blood products;
- Human, animal & plant cell lines;
- Biological waste and discarded materials contaminated with excretions from humans or animals;
- Preparations made from genetically altered living organisms and their products.

What cannot be autoclaved?
Types of waste that should not be autoclaved include: cancer drugs, toxic chemicals, radioisotopes, volatile chemicals or any other harmful material that can be vaporized and disseminated with heat. In general, do not autoclave flammable, reactive, corrosive, toxic or radioactive materials.

Autoclave Maintenance & Record Keeping
Autoclaves should be validated to ensure effective disinfection by spore testing quarterly and inspected yearly by a professional. Autoclave logs are required by the Massachusetts Department of Public Health and are available on the EH&S website.

How should I collect and dispose the waste?
Liquid infectious waste may be autoclaved and then disposed via the laboratory drainage system. (Do not pour melted agar into a sink. Allow it to cool and solidify for disposal as a solid waste.)

Follow these disposal procedures for solid biological waste:

1. Collect the biological waste in clear, unlabeled, high strength polymer autoclave bags (imprinted with process indicator, if possible).
2. Remove all biohazard labels. Ensure that words like "pathogenic," "infectious" or "biohazardous" have been removed from all autoclaved materials.
3. Autoclave and cool the waste.
4. Place the autoclave bag into a black polypropylene trash bag.
5. Put the bags into a second black polypropylene trash bag.
6. Ensure that the contents cannot puncture the black polypropylene trash bags.
7. Place the bags in an approved location/dumpster.

Questions?
Contact the EH&S Biosafety Program at: 545-2682, with questions about disposal of biological waste.