



## Autoclave Safety

An autoclave is a commonly used piece of equipment in laboratories. Autoclaves pose many hazards including physical hazards (e.g. heat, steam and pressure) and biological hazards. Each autoclave has unique characteristics.

Review and understand the owner's manual before using any autoclave for the first time and as needed thereafter. Contact the manufacturer to request on-site training as needed. Ensure the owner's manual is readily available in case questions arise during operation. Autoclave maintenance is an important aspect of a properly functioning autoclave. Follow the manufacturer's recommendations for preventative maintenance and ensure all contractors are approved by the manufacturer. Maintenance should include periodic efficiency tests to ensure the autoclave is functioning properly. Do not autoclave items containing corrosives (e.g. acids, bases, phenol), solvents or volatiles (e.g. ethanol, methanol, chloroform) or radioactive materials. Utilize the following autoclave safety practices:

1. Before using the autoclave, check inside the autoclave for any items left by the previous user that could pose a hazard (e.g. sharps).
2. Clean the drain strainer before loading the autoclave.
3. Load the autoclave properly as per the manufacturer's recommendations. Do not overload; tie bags loosely; steam needs to penetrate the densest part of the load.
4. To prevent bottles from shattering during pressurization, the caps of containers with liquids must be loosened before loading.
5. Use a tray with a solid bottom and walls to contain the contents and catch spills.
6. Add water to the autoclave bags to facilitate steam generation.
7. Add 1/4 to 1/2 inch of water to the tray so the bottles will heat evenly.
8. Check plastic materials to ensure they are compatible with the autoclave.
9. Individual glassware pieces should be within a heat resistant plastic tray on a shelf or rack and never placed directly on the autoclave bottom or floor
10. Make sure the door of the autoclave is fully closed (latched) and the correct cycle has been selected before starting the cycle.
11. Wear heat-resistant gloves when opening the autoclave door after a cycle. When there is a sharps hazard (e.g. biological waste), wear heat AND cut resistant gloves.



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12. Before removing autoclaved items, wait 5 minutes for loads containing only dry glassware, and 20 minutes for autoclaved liquid loads.
13. At a minimum, when removing items from an autoclave, safety glasses, a lab coat, sleeve protectors and heat-resistant gloves should be worn.
14. For non-liquid loads, let the glassware cool for 15 minutes before touching it with ungloved hands. For liquid loads, let liquids stand for a full hour before touching with ungloved hands. Be sure others in the area know a heat hazard is present.

For more information and/or suggestions contact the Environmental Safety Compliance Officer (ESCO) at Ext. 8441 or Email <mailto:umces-safety@umces.edu>