

Using your autoclave safely

Autoclaves are such a familiar piece of equipment in most laboratories settings that it is easy to forget the kinds of hazards they pose. The autoclave's job is to render its contents sterile, or to reduce the microbial load to an acceptable level. If it fails to accomplish this task, serious health hazards can result. The hot, pressurized steam that autoclaves generate makes them serious burn hazards as well. And, since the conditions created inside steam autoclaves are so extreme, autoclaves can easily malfunction if they are not carefully maintained.

Due to the various vintages and types of autoclaves found at UAB it is imperative, prior to first time use, that the user read and understand the owner's manual for that individual autoclave.



Important safety practices

There are several practices that will minimize the chance of a serious accident occurring but also increases the functionality of the autoclave.

1. Before using the autoclave, check to make sure no items were left inside by the previous user that could pose a hazard.
2. Clean the drain strainer before loading the autoclave
3. Load the autoclave properly as per manufacturer's recommendations.
4. Before loading containers of liquids into the autoclave, the caps must be loosened to avoid having the bottles shatter during pressurization.
5. Individual glassware pieces should be in heat resistant plastic trays on a shelf or rack and never placed directly on the autoclave bottom or floor.
6. Use a tray with a solid bottom and walls to contain the contents and catch spills.
7. Add $\frac{1}{4}$ to $\frac{1}{2}$ inch of water to the tray so the bottles will heat evenly.
8. When autoclaving solid waste make sure that a small amount of water is added to the waste bag to create steam inside the bag since the bag will be substantially sealed during the cycle.

9. Make sure plastic materials are compatible with being autoclaved.
10. Make sure the autoclave door is fully closed and latched and the correct cycle is selected before starting the cycle.
11. Wear heat resistant gloves when operating the autoclave door after a cycle.
12. If the door must be opened prior to the “cool down” cycle being completed, stand behind door when opening and beware of the rush of steam. Be sure to wear eye and face protection.
13. For non liquid glassware loads allow the material to cool for 15 minutes prior to touching it with ungloved hands. If the material is waste wear at least latex or equivalent gloves to place the waste in the proper medical waste container.
14. For liquid loads allow the material to cool for one (1) hour before touching with ungloved hands. Inform others in the area that a heat hazard is present.
15. At a minimum, when removing items from the autoclave, wear a rubber apron, rubber sleeve protectors, and heat resistant gloves
16. ALWAYS follow manufactures’ recommended practices and directions for using a particular autoclave.

Validation

Validating your autoclave is as important as knowing how to use your autoclave. For autoclaves used in waste treatment it is imperative that the equipment be validated at least once for each 40 hours of combined operation. Validation consists of placing a biological indicator in a sample load. Biological indicators such as *Geobacillus stearothermophilus* may be utilized. Autoclave tape is **NOT** an acceptable means of validation. For questions regarding validation materials and techniques please contact the Department of Occupational Health and Safety at 4-2487.

Prohibited autoclave activities

NEVER put solvents, volatile or corrosive chemicals (such as phenol, chloroform, bleach, etc.) in an autoclave.

Special Conditions

Radioisotopes may be autoclaved according to the PI’s specific license conditions **ONLY** and in such a manner that no breach of primary containment will allow volatile emissions from the container to occur.

Call OH&S at 4-2487 if you have questions about proper disposal of these materials.