

Autoclave Safety

All MU faculty, staff and students must be trained to operate an autoclave properly and safely before use. The physical hazards involve heat, steam and pressure. The biological hazards involve potential exposure to viable human pathogens. First, review the operational and safety instructions found in the manufacturer's operating manual. Additional autoclave training is given by EH&S (Biological Safety Professional) upon request. This training will focus on proper autoclave operating procedures, safety practices, maintenance, and testing for effectiveness.

Important Safety Practices

1. Load the autoclave properly per the manufacturer recommendations.
2. Be sure to clean the drain strainer before loading the autoclave.
3. Before loading containers of liquids into the autoclave, the caps must be loosened to avoid having the bottles shatter during pressurization.
4. Use a tray with a solid bottom and walls to contain the bottles and catch spills.
5. Add 1/4 to 1/2 inch of water so the bottles will heat evenly.
6. Don't load plastic materials that are not compatible with the autoclave.
7. 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.
8. Make sure the door of the autoclave is fully closed and the correct cycle has been selected before starting the cycle.
9. Wear heat-resistant gloves when cracking the autoclave door open after a run.
10. Before removing autoclaved items, wait 5 minutes for loads containing only dry glassware, and 10 minutes for autoclaved liquid loads.
11. When removing items from the autoclave, wear a rubber apron, rubber sleeve protectors, heat resistant mitts and a face shield. Remove the load and let the glassware cool for 15 minutes before touching it with ungloved hands.
12. Be alert for autoclaved liquid bottles still bubbling. Let liquid loads stand in an out-of-the-way place for a full hour before touching with ungloved hands. Hot glassware and scalding liquids will cause burns and serious harm.

Testing Autoclaves for Effectiveness

Autoclaves used for pathogen kill-loads or clean glassware sterilizing cycles, should be routinely tested once per month for killing effectiveness. Before placing new autoclaves into service, killing effectiveness testing must be completed. The most common way of testing is using commercially available test indicator kits with spore strips (usually *Bacillus stearothermophilus*). The spore strips are placed in the center of a typical load and run through a sterilization cycle. The spore strips are incubated with the non-autoclaved strips. To remove the spore strips from the biohazard bag without exposure to the contents, place the fresh spore strips inside of a glass screw cap tube. Tie a string around the neck of the tube. Bury the tube in the center of the load as you build it. Thread the string out of the top of the bag before you tie it with autoclave tape. After the kill cycle is completed, open the bag and pull on the string to retrieve the spore strip for incubation. If growth is noted on the autoclaved spore strips, try increasing the run time. If growth still occurs with run times of 45 minute or more, the autoclave may need maintenance and repair.

If there are any additional questions on autoclave safety, contact the Biological Safety Professional at 882-9125.