

## Autoclave Safety

### Introduction

Autoclaves are used for the sterilization of materials/supplies for laboratory use and contaminated items for disposal. Autoclaves use saturated high-pressure steam to achieve sterilization temperatures, so proper knowledge, training, use, and maintenance is important in ensuring operator safety.

### Training

All individuals using autoclaves should be trained by an experienced user within your area or training should be requested through the manufacturer as needed. Completion of the appropriate EH&S safety training modules is also required: [Laboratory Training Matrix](#).

### Operation Procedures

#### Preparation of Materials

- Place biological waste bags and liquid containers in a stainless steel or autoclave-appropriate pan in case of a spill.
- Fill liquid containers only half-full.
- Loosen caps or use vented closures.
- Space should be left between items to allow the steam to circulate.

#### Cycle Selection

- For autoclaving liquids, use the liquid cycle (121°C, 15 minutes for under 2 Liters).
- Select the fast exhaust cycle for glassware (135°C for 3 minutes)
- The fast exhaust cycle with a dry cycle is used for wrapped items (135°C for 3 minutes and 15-minute drying time)
- Bags containing biological waste should be autoclaved for 50 minutes to assure decontamination.

#### Removal of Materials

- Make sure the chamber pressure has returned to zero before opening the door
- Wear the appropriate PPE prior to removing any material from the autoclave (heat insulating gloves, eye protection, lab coat, and close-toe shoes)
- Stand behind the autoclave door before opening. Slowly open the door and allow the steam to gradually escape from the chamber.
- Allow materials, especially liquids, to cool for 20 minutes before removal.

### Maintenance

- Autoclaves should be maintained according to the manufacturer's schedule, specifications, or recommendations.
- If the manufacturer's specifications are not available, a maintenance schedule is to be determined by the facility.
- Efficiency (e.g. *Bacillus stearothermophilus* spore testing) testing should be performed periodically to ensure the autoclave is working properly.

## Recordkeeping

- All autoclaves must have a logbook that includes the following information: the operator's name, lab location, phone number, date, and type and amount of material.
- Prior to autoclaving any material, autoclave users must fill out all information requested in the autoclave logbook.
- All monthly quality assurance tests should be documented.

## Safety Reminders

- Radioactive, hazardous (acids, ethanol, chloroform), pathological (body parts, carcasses, organs), sharps, and mixed waste cannot be treated in an autoclave. Please use the following forms for disposal:
  - [Radioactive Waste Disposal](#)
  - [Biohazardous Waste Disposal](#)
  - [Chemical Hazardous Waste Disposal](#)
- Make sure the drain strainer is clean before using the autoclave.
- Never attempt to open the door while the machine is operating.
- Notify the area/lab supervisor if the autoclave is not functioning properly so that repairs can be scheduled. Do not attempt to make repairs to the autoclave.
- Use of the autoclave is prohibited until repairs are made, and a sign must be posted by the area/lab supervisor warning others not to use the autoclave.