GENERAL AUTOCLAVE SAFETY GUIDELINES

An autoclave is capable of rendering items sterile of any living organisms by using hot, pressurized steam. Biomedical research laboratories use autoclaves to sterilize glassware and instruments, media and solutions, and biohazardous waste. The hazards associated with autoclave use include heat, steam, and pressure. Familiarize yourself with the hazards and know how to protect yourself before operating an autoclave.

Do not operate an autoclave until you have been trained on how to do so safely.

Personal Protective Equipment (PPE)

- Always use PPE such as a lab coat, heat-resistant glove, and safety goggles when using an autoclave.
- Be sure arms are covered by a lab coat and longer heat-resistant gloves to prevent burns from heat and steam.

PREPARE THE AUTOCLAVE

- Inspect the door gasket (seal) for any cracks or bulges. The gasket should be smooth and pliable.
- Clean the drain screen of debris if necessary.
- Check the water level as per the manufacturer's instructions. If needed add deionized water only.
- If any problems are found, contact the responsible person before using the autoclave.
- Turn the autoclave on, and allow time for the jacket to reach sufficient temperature and pressure.

PREPARE ITEMS

- **Do not autoclave flammable, combustible, reactive, corrosive, toxic, or radioactive materials.**
- Check that plastics are compatible with the autoclave. Not all plastics can be autoclaved.
- Polypropylene or stainless steel tubs are typically used for secondary containment.
- Inspect glassware for cracks. Do not autoclave cracked or compromised glassware.
- For liquids, leave caps loose or cover with foil to allow steam penetration and prevent explosion.
- For bagged items, loosely tape or tie closed. Leave an opening for steam to penetrate the bag.
- Check the water level. Always use deionized or distilled water.
- Make sure a log book is available for recording the time and temperature.

LOAD

- Inspect for spills or debris inside the autoclave; check door gasket for cracks or bulges.
- Ensure that the jacket has reached sufficient pressure to start a cycle.
- Place items in an autoclave tub on a rack and paste the indicator one of the material.
- Never place items directly on the autoclave bottom or floor.
- Do not overload the autoclave. Allow sufficient space between items for steam.
- Add water if needed.
- Always use secondary containment in case of spillover.

OPERATE

- Follow the manufacturer's user manual and laboratory SOP for operating the autoclave.
- Close and lock the door. Ensure the door is secure before starting a cycle.
- Select the appropriate cycle given below (e.g. dry heat, sterilize media, sterilize biohazardous waste).
- Record run on log sheet.
- Do not open the autoclave door during a cycle! If necessary, abort the cycle and wait until the chamber depressurizes.
- If the cycle fails, notify the person responsible for the autoclave. Items may not be sufficiently decontaminated if the cycle is not complete.

Sterilizer	Temperature	Pressure	Time
Sterilization	121°C	15-pound psi	20
Biomedical waste	121°C	15-pound psi	60
Biomedical waste	135°C	31-pound psi	45
Biomedical waste	149°C	52-pound psi	30

UNLOAD

- When the cycle is complete, verify that the chamber temperature has dropped and the pressure is zero.
- Wear appropriate PPE to protect yourself from heat and steam (e.g. heat-resistant gloves, lab coat, safety glasses).
- Slowly open the door to allow steam to escape gradually. Keep your face away from the door.
- Allow items to stand in the autoclave for 10 minutes.
- Cautiously remove items, and place them in a safe area to cool. Do not agitate containers as boiling or superheated liquids can explode if moved too quickly.
- Record the cycle on a log sheet or logbook.

TRAIN AND MAINTAIN

- Designate a responsible person for the autoclave. The responsible person will train users and inform them if the autoclave is out of service.
- Train all autoclave users.
- Implement a regular maintenance schedule to ensure safe operation. Keep contact information for maintenance technicians available.