

Department of Biological Sciences

Autoclave Standard Operating Procedures

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AUTOCLAVE OPERATION

RISK MANAGEMENT

1. Associated Risks

1.1 Autoclaves, also known as steam sterilizers, operate at high temperatures and pressures and as a consequence pose a serious risk to operator safety.

1.2 Specific risks include:

- Heat, or burns from hot materials and autoclave chamber walls and door.
- Steam burns from residual steam venting from autoclave and materials on completion of cycle.
- Hot fluid scalds from boiling liquids and spillage in autoclave

2. Risk Control

2.1 Autoclaves to be regularly inspected and an inspection service and repair record maintained.

2.2 An authorized training session must be successfully completed prior to use of autoclaves.

2.3 Procedure and instruction documentation must be followed

2.4 Personal protection must be worn

- Heat-insulating gloves that provide complete coverage of hands and forearms must be worn when loading and unloading the autoclave.
- Eye protection, a lab coat and closed-toed footwear are required to protect against steam and scald burns.

OPERATION INSTRUCTIONS

1. Training

1.1 All operators must have successfully completed an authorized training session.

2. Material Preparation

2.1 Ensure that the material is autoclavable. Oils, waxes, some plastics, flammable materials and samples containing solvents or substances that may emit toxic fumes should not be autoclaved.

2.2 Package material suitably; loosen all lids.

2.3 Bottles with liquids must be a maximum of one-half full and lids loosened.

2.4 Place items in secondary containers, e.g. Nalgene trays provide in the autoclave room.

- If your lab has trays confirm with the Departmental Laboratory Supervisor that they are the correct trays.

2.5 Contaminated materials must be secured in containment vessels or autoclavable bags and processed as soon as possible according to licensing requirements for the handling of infectious materials.

3. Autoclave

3.1 Entries must be placed in the log books each time the autoclaves are used. These records are used for maintenance/service schedules and reporting of incidents, accidents and/or faults.

- There is a separate log book for each autoclave.

3.2 Entries should include:

- Full name
- Lab number (include building if outside of Dow)
- Date / Time / Run type / Run duration
- Problems encountered

4. Loading the autoclave

- 4.1 Wear heat-insulating gloves
- 4.2 Place material in autoclave
- 4.3 Close door firmly, engage door lock “dogs” on barrel autoclaves or slide door shut on automatic units.

5. Operating Autoclave (note: instructions are generic - see individual autoclave for specific instructions)

- 5.1 Choose appropriate cycle (liquid or dry)
- 5.2 Set appropriate time(s), and temperature for the cycle
- 5.3 Press cycle on button to initiate cycle
- 5.4 When cycling is complete:
 - The automatic autoclaves will sound an audible signal usually in conjunction with light or message indicating that the cycle is complete.
 - For the manual autoclave, close the steam valve. For fast exhaust (only) open the vent valve.

Operating Barrel Autoclaves

- 5.5 Close “waste” valve
- 5.6 Open “steam” valve
- 5.7 Allow 20 minutes for presterilization
- 5.8 Add on additional sterilization time
- 5.9 Close steam valve

6. Unloading the autoclave:

- **IF** running liquid or “slow” exhaust allow autoclave pressure to come back to zero.
- **IF** running “fast” exhaust open “waste valve and allow pressure to come back to zero.
 - 6.1. Ensure that the pressure of the chamber has dissipated before opening the door.
 - 6.2. Wearing gloves, keep hands and body away from top of door and carefully crack door open to release residual steam.
 - 6.3 Allow sterilized material to stand for 1-2 minutes. This will allow steam to clear and trapped air to escape from hot liquids, reducing operator risk. Watch for sudden boiling of super heated liquids.

7. Waste disposal and cleanup:

- 7.1 If container says “Biohazard” or is a “Sharps” box it must be placed in Biohazard box after cooling.
- 7.2 All other wastes must be double bagged in regular garbage bags.
- 7.3 Haul trash to dumpster outside loading dock.
- 7.4 Do not dump liquid containing melted agar down the drain. Instead collect it in a disposable container.
- 7.5 Clean up any spills in the autoclave or on the floor. Rinse out secondary trays and invert to dry.

See posted instructions or other manufacturers’ instructions for additional information.

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I have received Autoclave Safety Training and have read the Autoclave Standard Operating Procedures.

Name, please print

Signature

M number

Name and Building/room of lab where you are currently working: **(ex. Tang, Dow 415)**

Trainer/Supervisor Signature

Date