**SAFE USE OF AUTOCLAVES - TRAINING CHECKLIST**

1. **Review the following resources and this sheet before using an autoclave and at least annually thereafter.**

* [Info Sheet: Autoclave Safety](https://www.safety.duke.edu/sites/default/files/Autoclave_Safety_Info_sheet.pdf)
* [Hazard Alert: Autoclaving Liquids & Scald Risk](https://www.safety.duke.edu/sites/default/files/HazardAlert_AutoclavingLiquids.pdf)
* [Medical Waste Management](https://www.safety.duke.edu/sites/default/files/VII_3MedWaste.pdf) - “On or Off‐Site Research (BSL1 ‐ BSL2) / Teaching Laboratories (BSL1 ‐ BSL2)”

1. **Adhere to the following personal protective equipment (PPE) requirements**

* Always wear long pants or other clothing covering the legs, and closed-toed shoes.
* Always wear eye/face protection (safety glasses/goggles and/or face shield). Location of PPE: <building/room/...>
* Wear a lab coat or apron with long-sleeved shirt underneath. Location of PPE: <building/room/...>
* Wear heat resistant gloves on top of nitrile gloves when loading and unloading the autoclave. Location of PPE: <building/room/...>

1. **Take the following steps in preparing materials for the autoclave.**

* Ensure that only permitted material is to be autoclaved.
  + Do NOT autoclave non-autoclavable plastic containers/bags, aerosol cans, or unknown contents.
  + Do NOT autoclave volatile, toxic, reactive, flammable, combustible, or oxidizing chemicals.
* Prepare and load material to ensure proper steam penetration and venting.
  + Bottles/beakers/other containers need to be capped loosely or covered with aluminum foil.
  + Autoclavable waste bags need to be loosely closed with about an inch opening and secured with a ring of tape or rubber band.
  + Fill containers no more than half full with liquids and bags no more than ¾ with solids to prevent spill and boil over. Label at least one item per run with your lab, name, and phone number.
  + Use plastic or metal secondary containers on a cart for transport to the autoclave door.
  + Within the autoclave, do NOT use cardboard as secondary containment to hold biohazard bags or as absorbent material inside secondary containers.

1. **Carefully load the autoclave. The door and inside surface may be hot!**
   * Ensure the autoclave is operating properly before commencing.
   * Use metal secondary containers no more than 6 inches deep for sterilizing liquids/solids/waste.
     + Autoclavable plastic secondary containers are only appropriate for waste and solids that do not fit in metal secondary containers. Do not use non-autoclavable plastic – it may melt and cause damage!
   * Check the stability of all items in the secondary container and make sure individual items are not touching.
   * Load secondary container into autoclave with items, but do not allow bags to touch the sides/top of the autoclave.
   * Close autoclave door securely.
2. **Operate the autoclave.**

* Specific autoclave instructions: Click here and enter specific instructions on operating the autoclave model(s) to which your lab has access.
* Determine and start the appropriate cycle to use.
  + Sterilizing liquids ID: <cycle name> Temp: 121°C/250°F Duration: <…>
  + Sterilizing solids ID: <cycle name> Temp: 121°C/250°F Duration: <…>
  + Sterilizing waste ID: <cycle name> Temp: 121°C/250°F Duration:  90 min **OR**

*45 min + weekly BI validation\**

* + <Sterilizing …> ID: <cycle name> Temp: <…°C/…°F> Duration: <…>

\*Please see Medical Waste Management - “On or Off‐Site Research (BSL1 ‐ BSL2) / Teaching Laboratories (BSL1 ‐ BSL2)” for specific requirements regarding autoclaving waste for 45 min.

* Do not leave until the autoclave has gone past the purge phase to ensure that no steam is escaping.
  + If steam escapes through the door, attempt to safely and properly tighten the already closed autoclave door.
  + If steam continues to leak or if there are any alarms or run errors displayed, abort the cycle.
* Never attempt to open an autoclave during operation!
* Complete the “[Autoclave Log](https://www.safety.duke.edu/sites/default/files/Autoclave_Log.docx)” fully with all required information for every run.

1. **Unload the autoclave.**

* Verify desired temperature and duration of exposure has been met, and no errors have occurred.
  + This can be done in the following manner: Click here and enter specific instructions on reading the autoclave output and its error messages.
  + If an error has occurred, determine if maintenance assistance from E&O is needed. Your items will need to be re-autoclaved so a full cycle can be completed.
* Wait until the chamber pressure gauge reads zero and the autoclave indicates “cycle complete” before opening.
* Open the autoclave door 1 inch to allow steam to escape.
* Wait 10 min for the steam to be released from the autoclave chamber.   
  **CAUTION:** Contents remain hot!
* Place a cart near the autoclave door.
* Place the secondary tray from the autoclave onto your cart and allow items to cool before transporting them.

**TRAINING LOG**

Training is to be conducted by: <name and contact information>

In case of any issues with the autoclave, please contact: <name and contact information>

For maintenance issues, [contact E&O](https://eo.duhs.duke.edu/): (919) 684-3232

**““I have read and understand the “Safe Use of Autoclaves – Training Checklist” and the referenced documents. The specific information about the autoclaves I use has been provided to me. I agree to fully adhere to the safety requirements.”**

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