



AUTOCLAVING BIOHAZARDOUS WASTE GUIDELINES

PURPOSE: A properly operating autoclave renders biohazardous waste sterile so that it can be disposed of safely via municipal waste. By following operation and monitoring requirements, you help protect the health and safety of autoclave operators, waste handlers, the general public, and the environment.

SCOPE: Any University of Washington laboratory or facility that uses an autoclave to decontaminate biohazardous waste is required to follow the [General Autoclave Safety Guidelines](#), these Autoclaving Biohazardous Waste Guidelines, and implement a site-specific procedure for autoclaving biohazardous waste (template included at the end of this document).

REGULATIONS: Steam sterilization of biohazardous waste with an autoclave must be done in accordance with Seattle-King County regulations as specified in [Seattle Municipal Code, Section 21.43.050](#) and [King County Board of Health, Title 10.07](#). If you are operating an autoclave outside of Seattle or King County, follow local and state requirements. This document serves as a compliance tool to assist departments in meeting above regulations and policies set forth in the [UW Biohazardous Waste Management Plan](#) and the [UW Biosafety Manual](#).

RESPONSIBILITY: It is the responsibility of the principal investigator or laboratory/facility manager, and/or department to ensure compliance with all autoclave safety guidelines and the [UW Biohazardous Waste Management Plan](#).

TRAINING

- Develop and implement an autoclave training program. Include the following as part of training:
 - Review [General Autoclave Safety](#) and Autoclaving Biohazardous Waste Guidelines.
 - Watch Arizona State University's [Autoclave Training Video](#).
 - Provide training on site-specific procedure for autoclaving biohazardous waste.
- Designate a responsible person to assure autoclave operation and monitoring, train users, and inform users if the autoclave is not functioning properly.
- Train all users before they operate an autoclave, and maintain training records.

RECORDKEEPING

- Maintain and post autoclave log sheets or logbook near the autoclave.
- Prepare a standard operating procedure (SOP) for each autoclave that is used to treat biohazardous waste; SOP must include cycle time, temperature, pressure, waste type, containers, closure on containers, loading pattern, water content, and maximum load quantity (template SOP included at the end of this document).

AUTOCLAVE OPERATION

- Consult the manufacturer's manual for your autoclave to select or program a cycle.
- For sterilization of biohazardous waste, the cycle must include a **minimum temperature of 121°C or 250°F for 30 minutes or longer**, depending on size and compaction of the load. The full cycle time will take 60-90 minutes.
- Greater time and/or temperature may be necessary to sterilize certain loads.



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MONITORING

To ensure that an autoclave is adequately sterilizing waste, monitor each autoclave as follows:

Type of Monitoring	Frequency	Instructions
Temperature	Each cycle Annually	<ul style="list-style-type: none"> • Ensure autoclave has a recording and/or indicating thermometer or other method to verify temperature. • Check and record that sterilization temperature (121°C) was achieved and sustained for at least 30 minutes. • Calibrate thermometer.
Heat-sensitive tape (autoclave tape)	Each cycle	<ul style="list-style-type: none"> • Use heat-sensitive tape to visually indicate steam sterilization. • Tape only indicates that proper temperature was reached; it does not indicate heat was sustained for sufficient time.
Chemical integrator	Each cycle	<ul style="list-style-type: none"> • Place an approved integrator in the center of load to confirm attainment of adequate sterilization. • Note: Thermalog-S and Steriscan are the only integrators approved for use by the Seattle-King County Health Department.
Biological indicator	Monthly	<ul style="list-style-type: none"> • Use the biological indicator <i>Bacillus stearothermophilus</i> at the center of a load to confirm the attainment of adequate sterilization conditions. • Instructions are included on the Quality Control Checklist.
Structural inspection	Every 2 years	<ul style="list-style-type: none"> • If autoclave is over five cubic feet in volume, contact Facilities Services Maintenance & Alterations for an autoclave structural inspection with a qualified inspector (required per WAC 296-104-100). • Post sticker/sign indicating maximum permissible pressure and date of confirmation.

BACK-UP PLAN

Have a back-up plan for biohazardous waste if the autoclave needs repairs or a validation failure occurs. Biohazardous waste must be treated within eight days if stored above freezing (0°C). Options include:

- Use an alternate autoclave for treating biohazardous waste (specify location).
- Transport waste to Health Sciences Academic Services (T276) for treatment and disposal.
- Ship waste off-site via contracted carrier (training and account set-up required).
- Store waste in a secure freezer (specify location) for up to 90 days.

ACCIDENTS AND NEAR MISSES

- Post the [Exposure Response Poster](#) near the autoclave.
In the event of an accident, immediately provide first aid and get help.
- Report any accidents or near misses via the [Online Accident and Reporting System \(OARS\)](#).



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AUTOCLAVE DOCUMENTS

- [General Autoclave Safety Guidelines](#)
- [Quality Control Checklist and Biological Indicator Instructions](#)
- [Autoclave Log Sheet](#)
- [Autoclave Training Log](#)

RESOURCES

- Arizona State University's [Autoclave Training Video](#)
- [EH&S Autoclaves web page](#)
- [EH&S Laboratory Glass and Plastic Waste web page](#)
- [EH&S Packaging Sharps and Lab Glass Waste poster](#)
- [Health Sciences Laboratory Services](#) – Thermalog-S chemical integrators available for purchase
- [Spectrum Surgical/IMS](#) – both types of chemical integrators available for purchase
- [Fisher Scientific](#) – Steriscan chemical integrators available for purchase

QUESTIONS?

Contact an EH&S Biosafety Officer at ehsbio@uw.edu or 206.221.7770.



SITE-SPECIFIC PROCEDURES FOR AUTOCLAVING BIOHAZARDOUS WASTE

AUTOCLAVE INFORMATION			
Autoclave make/model:		Lab/Facility Name:	
Location (building/room):		Principal Investigator/Supervisor name:	
Person responsible for autoclave:		Phone number:	
Email:		Location of autoclave records:	
Completed by:		Date completed:	
MAINTENANCE INFORMATION			
Maintenance schedule:		Maintenance contact:	
Company:		Phone number:	
PERSONAL PROTECTIVE EQUIPMENT (PPE) REQUIRED:			
<input type="checkbox"/> Lab coat <input type="checkbox"/> Safety glasses <input type="checkbox"/> Face shield <input type="checkbox"/> Heat-resistant gloves <input type="checkbox"/> Latex gloves <input type="checkbox"/> Other (specify):			
PREPARE THE AUTOCLAVE			
<ul style="list-style-type: none"> Inspect the door gasket for cracks or bulges. Gasket should be smooth and pliable. Clean drain screen of debris if necessary. If the autoclave is not already on, turn the power on, and allow time for jacket to reach sufficient temperature and pressure. If any problems are found, contact the responsible person listed above. 			
PREPARE ITEMS			
<ul style="list-style-type: none"> Package waste items according as specified on the EH&S Biohazardous Waste and Sharps and Laboratory Glass and Plastic web pages. Refer to the Packaging Sharps and Lab Glass Waste poster. 			
Waste Type (select all that apply)	Preparation		
<input type="checkbox"/> Bagged solid biohazardous waste	<ul style="list-style-type: none"> Loosely tie or tape biohazard bags. Double bag agar plates to prevent leaking. Affix autoclave tape to bag. If items are protruding from the bag (e.g., pipet tips), re-package as biohazardous lab glass or plastic. 		
<input type="checkbox"/> Liquid biohazardous waste	<ul style="list-style-type: none"> Ensure caps on tubes or bottles are loose. Cover uncapped bottles or flasks with foil. Affix autoclave tape to items. 		



PREPARE ITEMS (continued)				
Waste Type (select all that apply)	Preparation			
<input type="checkbox"/> Sharps containers	<ul style="list-style-type: none"> ▪ Affix autoclave tape across closed lid and attach to sides without blocking vent holes. ▪ Label container with PI name and room number. ▪ If items are protruding from sharps container, place inside a larger sharps container before autoclaving. 			
<input type="checkbox"/> Biohazardous lab glass and plastic	<ul style="list-style-type: none"> ▪ Loosely tie or tape biohazard bags if using. ▪ Tape boxes closed, but do not seal completely. ▪ Label with PI name and room number. ▪ Affix autoclave tape to box. ▪ If items are protruding from box, place inside a larger box and relabel. 			
LOAD THE AUTOCLAVE				
<ul style="list-style-type: none"> • Place waste into autoclave tubs. Always use secondary containment in case of spillover. • Load tubs onto autoclave rack or shelf. Do not place directly on bottom of autoclave. • Insert a chemical integrator into the center of the load. • If necessary, add water to tubs, or add an autoclavable cup of water to the load. • Do not overfill the autoclave. 				
OPERATE				
<ul style="list-style-type: none"> • Close and lock door. Be sure door is secure before starting a cycle. • Select appropriate cycle to achieve minimum of 120°C/250°F for at least 30 minutes. 				
Waste Type (select all that apply)	Cycle Number	Liquid / Dry	Sterilization Time	Sterilization Temperature
<input type="checkbox"/> Bagged solid biohazardous waste				
<input type="checkbox"/> Liquid biohazardous waste				
<input type="checkbox"/> Sharps containers				
<input type="checkbox"/> Biohazardous lab glass and plastic				
<ul style="list-style-type: none"> • Record run on autoclave log sheet. • Do not open the autoclave door during a cycle! If necessary, abort the cycle and wait until chamber depressurizes. • If cycle fails, notify responsible person and follow back-up plan. Post the “Do Not Use Autoclave” poster. The waste still needs to be sterilized even if autoclave tape changed color. Cycle failure includes: <ul style="list-style-type: none"> ▪ Autoclave tape did not change color. ▪ Chemical integrator failed. ▪ Cycle did not maintain sterilization temperature for required time. ▪ Biological indicator test failed (refer to Biological Indicator Instructions). 				



UNLOAD

- When cycle is complete, verify that chamber temperature has dropped and pressure is zero.
- Wear appropriate PPE to protect yourself from heat and steam.
- 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.
- Visually inspect bags, boxes, and sharps containers for protruding objects.
- Cautiously remove items, and place items in a safe area to cool. Do not agitate containers.
- Record run information on [autoclave log sheet](#).

DISPOSAL

- Black lines on autoclave tape indicate waste is safe for handling by custodial staff.
- Refer to the [Biohazardous Waste Flow Chart](#) for your location.

Waste Type (select all that apply)	Disposal information
<input type="checkbox"/> Bagged solid biohazardous waste	▪ Place in regular trash container for custodial pick-up and disposal via municipal waste.
<input type="checkbox"/> Liquid biohazardous waste	▪ After liquids have cooled, dispose via sanitary sewer.
<input type="checkbox"/> Sharps containers	▪ Depends on location; refer to the Biohazardous Waste Flow Chart for your location.
<input type="checkbox"/> Biohazardous lab glass and plastic	▪ Place next to regular trash container for custodial pick-up and disposal via municipal waste.

ACCIDENTS AND NEAR MISSES

- Post the [Exposure Response Poster](#) near the autoclave.
- In the event of an accident, immediately provide first aid and get help.
- Report any accidents or near misses via the [Online Accident and Reporting System \(OARS\)](#).

BACK-UP PLAN IF AUTOCLAVE IS OUT OF SERVICE (SELECT ONE):

- Use an alternate autoclave. Specify location:
- Transport waste to Health Sciences Laboratory Services (T276).
- Ship waste off-site via contracted carrier (training and account set-up required).
- Store waste in secure freezer for up to 90 days. Specify location: