

UT - Martin Procedure: SA0450-M Biological Safety	
Version: 2	Effective Date: 12/08/2021

1. PURPOSE, APPLICABILITY, AND SCOPE:

Biological waste is generated by various teaching labs and research labs throughout Brehm Hall. Biological waste includes any item that has been contaminated with living cultures or an environmental release risk (i.e., recombinant DNA). Organic waste, usually in the form of dissection specimens, is not necessarily biohazardous but should also be handled and disposed of properly. Biological waste can be in three general categories (solid non-sharps, liquids, and sharps), each of which must be decontaminated and disposed of in an appropriate manner. All biological waste must be deposited in designated storage areas while awaiting decontamination. Waste generated by the department will typically be on green carts in each lab that are clearly labeled. Other possible waste disposal locations include pipette canisters and benchtop waste collection vessels (small containers filled with a small volume of disinfectant or lined with autoclave bags). All biological waste should only be removed from collection areas and decontaminated by trained personnel, usually the Academic Support Specialist. On-premises methods of decontamination include autoclaving (steam sterilization), chemical decontamination using disinfectants, and incineration.

2. DEFINITIONS

Please refer to SA0450 – Biological Safety for all applicable definitions.

3. RESPONSIBILITIES

The Chancellor designates the biosafety administrator for the UTM campus to ensure that applicable safety and compliance requirements are upheld by each entity that utilizes biological hazards.

The biosafety administrator shall serve on the campus Safety Committee and will conduct an annual self-assessment regarding possession and/or use of biological hazards or any agent that causes threat to human,

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animal, plant, or environmental health (with assistance from the chairs of departments which would potentially utilize biological hazards materials).

Should an assessment show the need for an institutional biosafety committee (IBC), the chancellor will establish an IBC as stipulated by UT System Policy SA0450.

4. NON-COMPLIANCE

In the event of any cited violation, immediate notification and proposed remedy of the same shall be made to the Executive Director of the Office of Research, Outreach, and Economic Development and the Institutional Compliance Committee chair.

5. RELATED LAWS, POLICIES, AND PROCEDURES

Please refer to SA0450 – Biological Safety for all applicable regulations.

6. SOLID BIOLOGICAL WASTE (NON-SHARP)

This includes any non-sharp item that has been contaminated with any microbiological culture or an environmental release risk (i.e., recombinant DNA). There will be different methods of decontamination for each type of solid, non-sharp waste, with the most common being listed below. Once autoclaved, solid waste can be placed in the trash.

a. Empty Reusable Labware

Any labware that has been in contact with or could reasonably be assumed to have been in contact with any microbiological culture should be considered contaminated, and therefore decontaminated before being returned into circulation. The preferred method of decontamination is by autoclave. The autoclave should only be used by trained personnel, and more information on proper use of the autoclave regarding biological waste can be found in section 10. If the labware is made of a material that cannot safely be autoclaved, chemical decontamination can be used. Chemical decontamination should be accomplished using approved disinfectants (BacDown, Alcotabs, or 10% bleach), with close attention being paid to the amount of time and concentration at which to soak items.

b. Solid Media

Solid media that has been exposed to microbiological cultures should be sterilized by autoclaving. Solid media can be in petri dishes, test tubes, or glass media bottles. Although media can be solid at room temperature, it should always be autoclaved on a liquid cycle as it is liquid at high temperatures. Petri dishes containing contaminated media should be placed into autoclave bags and stored on a green cart while

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awaiting decontamination. Test tubes containing solid media should be autoclaved, then the media poured into an autoclave bag to solidify. Further instruction on autoclaving can be found in section 10.

c. Reusable Glass Pipettes

Contaminated pipettes are collected in canisters either on or next to benches. Pipettes should always be segregated from other waste as they are more likely to puncture autoclave bags. Plastic pipettes or glass pipettes with cotton inserts are disposable, but glass pipettes without cotton inserts are reusable. Disposable pipettes should be placed into autoclave bags, then autoclaved for an appropriate time period. Reusable pipettes should be collected and placed tip-up in the pipette washer canister and then loaded into the pipette washer. One or two tablets of pipette cleaning solution (Alcotabs) should then be added to the washer and the washer filled with hot water and allowed to sit overnight. After soaking, the washer should be flushed for approximately 30 minutes with clean water. Once flushing is complete, the pipettes should be removed from the washer and placed into the nearby racks to dry before being returned into circulation.

d. Benchtop Waste

Benchtop waste is collected in vessels filled with a small amount of disinfectant or lined with autoclave bags. When full or no longer in use, the autoclave bag should be removed from the vessel and autoclaved following the proper procedure. A new autoclave bag should be placed in the vessel immediately to avoid contamination of the vessel. Waste in vessels with disinfectant should be transferred to an autoclave bag while wearing latex or nitrile gloves. Benchtop waste includes, but is not limited to, micropipette tips, centrifuge tubes, gloves, cotton swabs, and paper towels. All items in benchtop waste containers are considered disposable.

7. LIQUID BIOLOGICAL WASTE

Liquid biological waste includes any liquid that has been exposed to living cultures. Liquids in flasks can be stored on green carts until autoclaved. Liquid in test tubes can be stored in test tube racks until autoclaved.

The most common form of liquid biological waste is culture medium. Unless known to be sterile, culture medium should be assumed to be contaminated. Contaminated liquids that do not contain chemical disinfectants should be autoclaved if the vessel allows it. In the rare event that the container is not able to be autoclaved, chemical decontamination should be used. Add enough bleach to the liquid so that it makes up 10% of the total volume and allow to sit for at least 30 minutes. Discharge cooled, treated liquids to the sewer by way of the lab sink.

Safety Note: Do NOT autoclave any liquid that contains a chemical disinfectant.

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8. BIOHAZARDOUS SHARPS

A biohazardous sharp is any device that is sharp enough to puncture the skin and that has been contaminated. These can include, but are not limited to, needles, Pasteur pipettes, and small pieces of glass from contaminated glassware.

a. Storage

All sharps should immediately be deposited into biohazardous sharps containers which are specifically designed for the collection and disposal of biohazardous sharps. These containers should be placed in convenient locations and inspected for proper assembly (i.e., lid installed) before use.

b. Disposal

Once a sharps container is 75% full or when deposited items do not fall into the container freely, the container should be closed and replaced with a new container.

c. Pickup

Filled sharps containers are picked up approximately every 90 days from Student Health. Call (731) 881- 7750 for instruction on when to take sharps containers to the Student Health building.

9. ORGANIC WASTE

Organic waste generated by the department usually takes the form of dissection specimens, either pre- or post-dissection. Dissection specimens are usually received in Carolina's Perfect Solution, which is a safer alternative to formaldehyde but still requires caution. Carolina's Perfect Solution is not a RCRA hazardous waste.

a. Handling

Gloves should always be worn while handling dissection specimens. If the solution or the specimen come in contact with skin or eyes, flush immediately with plenty of water. It is recommended that eye protection be worn when handling the large buckets containing specimens.

b. Storage

Pre-dissection, specimens are stored in resealable buckets. These buckets should always have the lids securely fastened and be out of general walkways. Post-dissection, specimens are stored in clear, sealed bags either in the back of the lab where they were used or the prep room for that lab. The Academic Support Specialist should be notified when they are ready for disposal.

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c. Disposal

Post-dissection specimens should be transported by the Academic Support Specialist to the incinerator located on the UT Martin farm. Please consult the farm manager if instruction is required in use of the incinerator. Gloves should be worn when handling the bags of specimens. In the event that the incinerator is unavailable, specimens can be double-bagged and disposed of in the regular trash. Any remaining preservation solution can be discharged into the sinks and flushed with water.

10. AUTOCLAVES

Autoclaves should only be operated by trained personnel, and should never be left unattended (i.e. starting a cycle and leaving for the day). Both autoclaves are equipped with emergency shutoffs and alarms. Always be sure that the material to be autoclaved is approved for autoclaving.

a. Preparation

All items entering the autoclave for sterilization should be marked with indicator tape. This tape begins white and turns brown/black to indicate that it has been autoclaved. For proper sterilization, the steam from the autoclave must be able to come into contact with the item being autoclaved. This means that any liquid to be autoclaved must not be completely sealed. Lids and caps should be loosened as much as possible, and open containers covered lightly with aluminum foil. Bags of waste that are to be autoclaved should not be sealed tight, but instead fastened loosely closed with the provided ties. Any liquid or bag should be placed in an autoclave pan. Items such as pipette tip boxes and racks of empty test tubes can be placed directly on the interior shelves.

b. Operation

When operating the autoclave, it is important to choose the appropriate cycle. The liquid cycle should be chosen when any amount of liquid is present. If a substance is solid at room temperature but liquid at higher temperatures, it is classified as a liquid for autoclaving purposes. The dry or gravity cycles should only be used for items that are completely dry (i.e., empty test tubes). For most applications (bags of waste and liquids less than 500mL), the 30-minute liquid cycle is sufficient. For larger volumes, the cycle time must be increased to ensure sterilization.

c. Disposal

Once waste has been autoclaved, it must be allowed to cool. Liquid waste can then be poured into the lab sink. Waste autoclaved in bags should be checked for leaks before depositing into the regular trash. As of this writing, waste is picked up by janitorial staff overnight and then later by Red River Waste Solutions. Because Red River Waste Solutions transports waste directly to landfills without human sorting, biohazard bags are safe to deposit into the regular trash after decontamination. For verification, call (731) 884-2860.

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For More Information:

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