

THE UNIVERSITY OF ALABAMA IN HUNTSVILLE

BIOLOGICAL WASTE HANDLING GUIDE

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Division

Office of Environmental Health and Safety

Date

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Purpose

The purpose of the UAH Biological Waste Handling Guide is to prevent personal exposures and releases to the environment of regulated biological waste and to maintain compliance with federal, local and state regulations. The purpose is accomplished by providing information to biological waste generators regarding the proper handling, packaging, and labeling of biological waste.

Policy

At UAH, the term biohazardous waste is used to describe different types of waste that might include infectious agents. Currently, the following waste categories are all considered to be biohazardous waste:

- **Medical waste:** Defined as any solid waste, which is generated in the diagnosis, treatment (e.g., provision of medical services), or immunization of human beings or animals, in research pertaining thereto, **OR** in the production or testing of biologicals.

Medical waste includes:

- (a) Cultures and stocks of infectious agents and associated biologicals, including laboratory waste, biological production waste, discarded live and attenuated vaccines, culture dishes, and related devices.
- (b) Liquid human and animal waste, including blood and blood products and body fluids, but not including urine or materials stained with blood or body fluids.
- (c) Pathological waste: defined as human organs, tissues, body parts other than teeth, products of conception, and fluids removed by trauma or during surgery or autopsy or other medical procedure, and not fixed in formaldehyde.
- (d) Sharps: Defined as needles, syringes, scalpels, and intravenous tubing with needles attached regardless of whether they are contaminated or not.
- (e) Contaminated wastes from animals that have been exposed to agents infectious to humans, these being primarily research animals.

- **Regulated biological wastes include:**

- (a) Liquid or semi-liquid blood or other potentially infectious materials;

- (b) Contaminated items that would release blood or other potentially infectious materials in a liquid or semiliquid state if compressed;
- (c) Items that are caked with dried blood or other potentially infectious materials and are capable of releasing these materials during handling;
- (d) Contaminated sharps which includes any contaminated object that can penetrate the skin;
- (e) Pathological and microbiological wastes containing blood or other potentially infectious materials.

• **Laboratory waste and regulated waste** as defined in the Guidelines for Research Involving RDNA Molecules (NIH Guidelines) and the CDC/NIH *Biosafety in Microbiological and Biomedical Laboratories (BMBL)*.

The CDC/NIH Guidelines cover contaminated waste that is potentially infectious or hazardous for humans and animals. The same is true for the NIH Guidelines on recombinant DNA, which also covers contaminated waste potentially infectious or hazardous for plants.

General Labeling, Packaging and Disposal Procedures

Currently, biohazardous waste is to be decontaminated before leaving UAH. Most of the waste can be autoclaved prior to disposal. The responsibility for decontamination and proper disposal of biohazardous waste lies with the producing facility (e.g., laboratory and department). The OEHS assists only in the disposal of sharps and pathological waste including animal carcasses. All biohazardous waste needs to be packaged, contained and located in a way that protects and prevents the waste from release at any time at the producing facility prior to ultimate disposal. If storage is necessary, putrefaction and the release of infectious agents in the air must be prevented.

Biohazardous waste cannot be stored more than 90 days at UAH.

ADEM regulations have specific prohibitions on the disposal of all items bearing either an international biohazard symbol or any wording indicating that the items contain infectious waste, biohazardous waste or medical waste. In order to dispose of treated medical waste as trash the autoclave bag must not be red or orange nor contain any wording or symbols indicating that it contains medical waste. The state prohibits using an orange/red bag for autoclaving and then placing it into a black trash bag for disposal.

To provide for proper identification of biohazardous materials in the laboratory it is suggested that you acquire outer secondary containers such as a trash receptacle and affix a biohazard symbol on their exterior surface. The autoclavable bag (not orange or red) can then be placed inside the secondary container. This allows the material to be clearly identified in the lab and still allows disposal of the bagged material in the solid waste stream.

Most general science catalogs contain a listing for small clear autoclave bags which fit into wire frame holders, if your lab uses small tabletop biohazard bags. Again, the holder may be marked with a biohazard symbol, if necessary. These clear bags must be autoclaved. Autoclave tape must be placed on the bags to identify that they have been through the autoclave procedure. They may be disposed of with the trash waste stream after sterilization.

All autoclaves used for the decontamination of biohazardous waste must be tested on an annual basis. After successful autoclaving (decontamination), place all biohazard bags in plastic non-biohazard bags that are leak-proof. These can be put in the waste stream picked up by custodial services. Biohazardous waste that has been successfully sterilized by autoclaving is no longer considered hazardous.

Since autoclaves are an integral part of UAH's biohazardous waste treatment procedure, proper operation and maintenance is very important. All users of autoclaves need to be trained in the proper operating procedures either through the laboratory supervisor or Principal Investigator or whoever was put in charge by the department. Maintenance and repair of autoclaves used for the decontamination of biohazardous waste are the responsibility of the individual departments. If the department chooses to not use autoclaves for their biohazardous waste treatment, alternative procedures (e.g., outside biomedical waste disposal and transport) need to be established.

Waste Specific Procedures for BL-1 and 2 Cultures

Cultures, Stocks and Related Materials

Cultures and stocks of infectious agents and associated biologicals (as defined above), shall be placed in biohazard bags and decontaminated by autoclaving. Double or triple bagging may be required to avoid rupture or puncture of the bags.

Bulk Liquid Waste, Blood and Blood Products

All liquid waste from humans or animals such as blood, blood products and certain body fluids, known to not contain infectious agents, can be disposed of directly by flushing down a sanitary sewer. However, due to coagulation, flushing of large quantities of blood is impractical. Autoclave or treat with a disinfectant all other liquid biohazardous waste.

Sharps

All sharps must be placed in a rigid, puncture resistant, closeable and leak-proof container, which is labeled with the word "Sharps" and the biohazard symbol. Approved sharps containers are available through laboratory supply stores. Food containers (e.g., empty coffee cans) are not permissible as sharps containers. All sharps must be handled with extreme caution. The

clipping, breaking, and recapping of needles is not recommended. Sharps containers should not be filled more than 2/3 full. After use, the container needs to be closed and the OEHS contacted for a pick-up. To comply with the 90-day storage limit, contact the OEHS for pick-up as soon as possible. Never place any type of sharps in the trash.

Contaminated Solid Waste

Contaminated solid waste includes cloth, plastic and paper items that have been exposed to agents infectious or hazardous to humans, animals or plants. These contaminated items shall be placed in biohazard bags and decontaminated by autoclaving. Double or triple bagging may be required to avoid rupture or puncture of the bags. Contaminated Pasteur pipettes are considered sharps and need to be disposed of in a sharps container.

Waste Specific Procedures for Biosafety Level (BL-3)

All biohazardous waste including RG-2 and 3 agents that are handled at BL-3 is to be autoclaved at the point of origin (laboratory, or facility). Transportation of non-autoclaved BL-3 waste outside of the facility is generally not permitted.

Animal Waste

Collect animal carcasses, tissues, or bedding in non-transparent, 4-6 mil plastic bags.

Small animal carcasses may be individually bagged and collected together in a larger leak-proof container. For small animals, do not exceed 35 pounds total weight per bag. Large animals shall be securely packaged in large plastic bags. Bind any limbs or sharp protrusions so they will not puncture the bag. Leaky or punctured bags will not be picked up.

Labels must identify the waste or it will not be removed. Affix labels to the waste container(s) or bag(s) using twist ties or freezer tape. Attach the labels so they will not fall off during transportation and storage. Labels should not be permanently cemented or excessively taped as this prevents the label from being removed for record keeping purposes.

If the waste contains known viable pathogens e.g., the animal had an infectious zoonotic disease or was inoculated with a known pathogen, enter the name of the biohazardous agent on the waste tag and attach a biohazard sticker to the container. If no known viable pathogens are present, mark the waste as noninfectious on the waste tag. Non-infectious animal carcasses can be incinerated locally. Store carcasses in a freezer or cold storage area. Keep freezers/cold storage areas clean and defrost them regularly. Do not mix pathological wastes contaminated with hazardous chemicals or

radioisotopes with uncontaminated waste. Pathological wastes containing radioactive materials shall also be labeled with a radioactive waste tag.

Human Waste

Collect human pathological waste in leak-proof containers labeled with the words "Medical Waste". Human pathological waste shall be cremated or buried in a cemetery. Small pieces of tissue and fluids shall be disposed of by grinding and flushing down a sanitary sewer or incineration.

Department or Facility Specific Waste Procedures

If required, departments or facilities may establish biohazardous waste procedures that are more stringent than the above listed procedures. A written copy of these procedures should be made available to the OEHS prior to initiation.

Decontamination of Biohazardous Waste by Autoclaving

Autoclaving is accepted as a safe and effective procedure for sterilization. There are numerous operating autoclaves on the UAH campus. To ensure that any biohazardous waste created by the UAH community is properly decontaminated, each autoclave should be tested annually for appropriate function. Biological and chemical tests are used to monitor the autoclave cycle inside the chamber. Ampoules with heat resistant spores (*Bacillus stearothernophilus*) may be used to indicate that adequate sterilization conditions are reached. A steam sterilization integrator strip is used to indicate pressure, moisture, and time.

Procedures

All autoclaves used for decontamination need to be tested on at least an annual basis.

Strong oxidizing material (chemicals) must not be autoclaved with organic material: Oxidizer + Organic Material + Heat = Possible Explosion

All biohazardous waste must be placed in clear bags with a heat sensitive "Autoclaved" indicator.

Prior to autoclaving, a biohazard bag containing waste must be kept closed to prevent airborne contamination and nuisance odors. However, when autoclaving, the bag must be open to allow the steam to penetrate. Upon removal of the bag from the autoclave, it should be closed and disposed of in a waste bag.

It is recommended to add water to each biohazard before autoclaving.

Autoclave biohazardous materials for at least 40 minutes at the standard 121

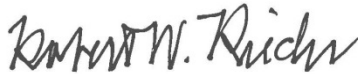
C/250°F and 15 PSI for a single bag and at least 60 minutes for a run with numerous bags.

Contact the OEHS at 2352 for any information or to request a pick-up of waste.

Review

The Office of Environmental Health and Safety (OEHS) is responsible for the review of this policy every five years (or whenever circumstances require).

Approval

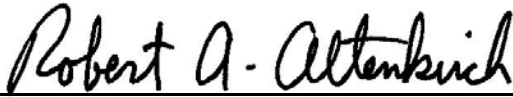


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