



Animal Facility SOP 11.2 Chemical Waste

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I. Purpose

The purpose of this Standard Operating Procedure (SOP) is to define chemical waste and to provide information on the handling and disposal of this waste stream. These guidelines are intended to ensure the proper and safe management of chemical waste at the MSU.

II. Definitions:

- **Chemical waste:** is a waste that is made from harmful chemicals. Chemical waste may fall under regulations such as the Clean Water Act and Resource Conservation and Recovery Act in the United States. In the U.S., the Environmental Protection Agency (EPA) and the Occupational Safety and Health Administration (OSHA), as well as state and local regulations also regulate chemical use and disposal. Chemical waste may or may not be classed as hazardous waste.
- **Hazardous waste:** any waste product that poses a hazard or potential hazard to human health, which may be generated by a manufacturing process (for example: radioactivity, chemicals, pesticides, acids and liquid deemed harmful by a healthcare facility professional including regulated biohazardous waste.
- **Personal Protective Equipment (PPE):** refers to protective clothing, helmets, goggles, hearing protection, respiratory protection, or equipment designed to protect the wearer's body from injury or infection. The purpose of PPE is to reduce user exposure to hazards. The hazards addressed by PPE include physical, electrical, heat, chemicals, biohazards, and airborne particulate matter.
- **Satellite accumulation area (SAA):** is a designated area within the laboratory or point of generation of the hazardous waste which will store the waste until it is sent out for disposal. This area can be a bench top, small section of the hood, a combination of both or even a previously empty cabinet. The animal husbandry supervisor is responsible for overseeing the process resulting in the generation of these wastes.

III. Area(s) of Responsibility: This policy applies to:

Principal Investigators:

- Ensure all lab staff/students have received proper training to deal with chemical waste;
- Communicate these guidelines to key personnel;
- Ensure that the lab is complying with the SAA requirements;
- Ensure labs are equipped with the proper containers, and that they are ideally located.

Users (students, laboratory or clinic personnel):

- Practice due diligence at all times when handling chemical waste (i.e. wear appropriate PPE, comply with SAA requirements, etc.);
- Ensure familiarity with the handling, treatment and disposal procedures of the waste generated.
- Those whose current health condition is **under supervision** must be cleared by a physician
- Pregnant women should not be in contact **with any chemicals deemed harmful such as BrdU (teratogenic nucleoside analog use for labeling dividing cells) , Paraformaldehyde and Zolizina (anti-cancer agent)** Such chemicals are either human carcinogens or have teratogenic, or cytotoxic properties. These potential health hazards suggest exposure can pose a significant health and safety threat to laboratory staff, animal handlers and other personnel who may be accidentally exposed via inhalation, ingestion, accidental injection and tissue/transplacental absorption. Use of these and similar hazards require a Use and disposal plan as part of the IACUC protocol.
- Good personal hygiene will often **reduce** the possibility of occupational injury and cross contamination.

IV. Waste accumulation

Chemical waste will be managed at an SAA. An SAA is an area where a generator may accumulate up to 55 gallons of non-acutely hazardous waste or one quart of acutely hazardous waste (P-list waste) in containers at or near any point of generation, which is under the control of the person(s) who generated the waste. Every laboratory or work area that generates chemical waste must contain an SAA. Each SAA will comply with 40 CFR 262.15. Additional details on the SAA requirements are presented in the following sections.

SAA Inspection

All SAAs must be inspected on a weekly basis. This inspection does not have to be a formal inspection with documentation but laboratory personnel must inspect all chemical waste stored in their laboratories to assure the following:

- There are no leaking containers of chemical waste.
- All containers holding chemical waste are appropriately labeled.
- All containers are sealed and closed. This includes waste containers holding solid chemical waste.
- All liquid chemical wastes are stored in secondary containment bins.
- Incompatible wastes such as flammable solutions, acids, bases, ammonia, bleach or any solution or compound that may cause an adverse reaction when combined must be stored away from each other and in separate containment bins.
- There will be no excessive accumulation of waste stored in the laboratory at any time

- If any of these situations are encountered during the course of the weekly inspection, it must be corrected immediately.

Location

The SAA will be located in a designated location in the laboratory. A sign will be posted indicating the requirements of the SAA.

Segregation

- The various types of chemical waste should be segregated from each other.
 - Refer to the chemical SDS for a list of incompatible materials.
 - Liquid waste and solid waste should be segregated.
- Chemical waste must not be mixed with radioactive or other laboratory trash.
 - Carcasses with radioactive chemicals should be separated from chemical waste and depending on the half life of the radioisotope or hazard, they will be non radioactive at some point and can be removed normally. Hazard bags containing radioactive carcasses should be labeled with the date placed, and the name of the hazardous chemical and the chemical's half-life.
 - Carcasses with teratogenic chemicals (e.g., BrDU) should be separated by the individual designated in the hazard exposure plan, labeled with chemical name, date.

Containment & Labeling

Containers for chemical waste must be appropriate for its contents. There are several different kinds of containers and bags available for the containment and disposal of chemical waste. Containers and bags are available through Triumvirate Environmental. The various types of packaging and associated labeling used for different types of chemical waste are outlined below.

- All containers for chemical waste must have a label listing the chemicals inside the container and must display the words "Hazardous Waste" in a color contrasting the container;
- The container must be rigid, leak proof, puncture resistant, sealable and in good conditions;
- The container and its contents must be compatible;
- Lids will fit securely; containers will remain closed unless material is being added/removed or the container must be vented.
- The SAA should have secondary containment that would contain any incidental spills.
- The containers should be on a flat surface.
- Containers cannot be overfilled

Arranging Waste Pick Up.

Full waste containers must be removed from the SAA within three calendar days. The laboratory personnel will contact the Office of Safety Health & Environment (OSHE) at oshe@morgan.edu and EHS Specialist, Laura O'Donnell at laura.odonnell@morgan.edu for chemical waste removal, pickup and disposal. Full waste containers will be removed from the SAA by the waste contractor and moved to the central accumulation area (CAA) located near the loading dock of BSSC. The waste generator will be required to complete the Waste Pick Up Form (Appendix X).

- Arrangements are made with OSHE
- Maintain records regarding the amount of waste generated. All PIs must have a documentation of waste generated from their research
- Principal Investigators, users ensure that all members of the lab are complying with guidelines. OSHE provide guidance regarding the handling treatment or disposal of chemical waste