Syracuse University

Laboratory Guidance Document

Reproductive Toxins

This Laboratory Guidance Document was created by Syracuse University Environmental Health & Safety Services (EHSS) to assist researchers in developing laboratory specific standard operating procedures (SOP) for the storage, handling, and disposal of reproductive toxins.

Potential Hazards:

Reproductive Toxins are chemicals that may have adverse effects on various aspects of reproduction in both women and men, including fertility, gestation/pregnancy, birth defects, lactation, genetic effects, and general reproductive performance.

- Reproductive toxins may affect reproductive capabilities by causing chromosomal damage (mutation) and adverse effects on fetal development (teratogen).
- Adverse effects of exposure may not be evident until children are desired.
- Many reproductive toxins are also classified as acutely toxic, flammable, or pyrophoric. Safe use requires assessing all potential hazards.

Physical & Chemical Properties:

A wide variety of chemicals and compounds are classified as a reproductive toxin.

- Common reproductive toxins used in the laboratory include: acrylamide, benzene, chloroform, 3,3'-diaminobenzidine, methylene chloride, toluene.

General Precautions:

Reproductive toxins are included in a category of chemicals designated by OSHA as "Particularly Hazardous Substances" and require extreme care; if not stored, handled, and disposed of properly, reproductive toxins pose a serious threat to the health and safety of laboratory personnel and waste handlers.

1. **Training.**
   The Principal Investigator is responsible for ensuring all personnel under their supervision are aware of the hazards of reproductive toxins, have received appropriate hands-on training, adhere to the laboratory standard operating procedures, and are provided with the appropriate personal protective equipment.
2. **Substitution.**
   When possible, substitute for a less hazardous material.
3. **Designated work areas.**
   All reproductive toxins must be used in a designated area within the laboratory, such as a specific fume hood or glove box, with dedicated tools (e.g., pipets, tube racks). Use of the designated area(s) should be limited to personnel who are trained and knowledgeable in working with reproductive toxins.
4. **Awareness.**
   As with all mutagenic and teratogenic substances, use by pregnant persons warrants careful consideration.

Personal Protective Equipment (PPE):

In addition to the standard laboratory attire (i.e., long pants and closed toe shoes), the following PPE is recommended:

- ANSI certified (Z87) chemical splash goggles
- Knee-length lab coat
- Chemically compatible gloves

Best Practices for the Safe Handling of Reproductive Toxins:

1. Review the Safety Data Sheet (SDS), laboratory standard operating procedure (SOP), and emergency response procedures before starting any protocols requiring reproductive toxins.
2. Post a hazard warning sign (*Appendix I*) at all reproductive toxin storage and designated work areas.
3. Perform all operations involving reproductive toxins inside a fume hood.
4. Measure and/or aliquot reproductive toxins inside fume hood.
   NOTE: When weighing solid chemicals, it is helpful to add the chemical to a pre-weighed container inside a fume hood. The container is then sealed and transported to a balance/scale located outside of the fume hood.
5. Transport even small quantities of reproductive toxins in secondary containment.
6. Place bench paper over the designated work area to prevent contamination of the work surfaces.
7. Use high efficiency particulate air (HEPA) filters on effluent vacuum lines whenever feasible.

Storage:

- Store in a cool, dry area away within secondary containment.
- Store only with chemically compatibility materials.
- Avoid storage areas where a breach of containment would allow reproductive toxins to reach a sink or floor drain.

Disposal & Waste Management:

Reproductive toxins present a hazard if poured down the drain or placed in the trash.

- Dispose of reproductive toxin waste and contaminated materials (e.g., pipette tips) as hazardous waste.

Spill Response:

Only personnel who understand the hazards of reproductive toxins and are confident in their ability to safely and properly clean the spill should perform the cleanup.

- EHSS and/or the lab personnel may clean small spills by absorbing the spill with a compatible absorbent then decontaminating the spill area with water.
- EHSS will oversee and direct the cleanup of large spills. Depending on the location and/or severity of the spill, EHSS may seek assistance from an outside emergency response services provider.
- All cleanup materials contaminated with reproductive toxins should be disposed of as hazardous waste.

First Aid:

The chemical's SDS should be readily available and used as a reference for determining appropriate first aid measures. The following information provides typical first aid measures recommended for chemical exposures.

1. **Skin Contact:** Remove all contaminated clothing and rinse affected area with water for at least 15 minutes.
2. **Eye Contact:** Flush with water at an emergency eyewash station for at least 15 minutes.
3. **Ingestion:** Seek medical attention immediately.
4. **Inhalation:** Move to fresh air and seek medical attention immediately.

Incident Response:

All laboratory emergencies must be reported to the Department of Public Safety at 315-443-2224.

Additional Resources:

1. United States Department of Labor: OSHA Health and Safety Topics - Reproductive Toxins
2. United States Department of Labor: OSHA Occupational Exposure to Hazardous Chemicals in Laboratories.
3. State of California Environmental Protection Agency: Chemicals Known to Cause Cancer or Reproductive Toxicity ("Proposition 65 List")