

Syracuse University

Laboratory Guidance Document

Carcinogens

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

Potential Hazards:

Carcinogenic materials are chronic toxins that can cause cancer or tumor development. The harmful effects from exposure may only become apparent after long latency periods. Damage may occur after repeated or long duration exposures via inhalation, ingestion, and/or dermal absorption.

Properties:

A wide variety of compounds are known carcinogens which can initiate or accelerate the development of malignant neoplastic cells or the development of malignant or potentially malignant tumors. Examples of human carcinogens include:

- Arsenic/Inorganic arsenic compounds
- Asbestos
- Benzene
- Beryllium/Beryllium compounds
- Cadmium/Cadmium compounds
- Chromium (VI) compounds
- Chloroform
- Formaldehyde
- Nickel compounds
- Vinyl Chloride

General Precautions:

1. Training

The Principal Investigator is responsible for ensuring all personnel under their supervision are aware of the hazards of carcinogenic materials, have received appropriate hands-on training, adhere to the laboratory standard operating procedures (SOPs), and are provided with the appropriate personal protective equipment.

2. Awareness

Carcinogenic materials often present other associated hazards, such as flammability. Be aware of all hazards present, and adjust SOPs accordingly.

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

Additional PPE may be necessary based on other hazards present.

Best Practices for the Safe Handling of Carcinogens:

Although SOPs will vary according to the material used, the following practices are generally applicable for projects involving carcinogenic materials:

1. Demarcate carcinogenic material use areas by posting [in-lab primary hazard postings](#).
2. Review the Safety Data Sheet (SDS), laboratory SOP, and emergency procedures before starting any work requiring carcinogenic materials.
3. Conduct work involving carcinogenic compounds within a fume hood.
4. Ensure that storage containers are in good condition and compatible with the chemical.
5. Procure and store only the smallest practical quantities for the experiment performed.
6. Line work surfaces with removable plastic-backed absorbent pads.
7. Double-contain carcinogenic materials in chemical resistant trays.

Storage:

1. Demarcate carcinogenic material storage areas by posting [in-lab primary hazard postings](#).
2. Keep carcinogenic materials segregated from incompatible chemicals, and away from heat/flare.
3. Place large volume containers on low, protected shelves.
4. Do not store carcinogenic material containers in any area where a leak or spill would flow into a drain.

Disposal & Waste Management:

Carcinogens should be collected as hazardous waste.

- Items which have come into contact a carcinogenic material (e.g. weigh boats, wipes, pipette tips, and gloves) which only have trace amounts of the material on them, can be disposed of in the normal trash.
 - This does not include P-listed (acutely toxic) carcinogenic materials. All items contaminated with P-listed materials should be collected as hazardous waste. The manufacturer's SDS for the carcinogen used in the laboratory should be used as a reference for determining appropriate if it is P-listed.
- Place the waste container in the satellite accumulation area in secondary containment and notify the EHSS Hazardous Waste Group at 315.443.9132 for disposal.

Spill Response:

Only personnel who understand the hazards of the carcinogenic material 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 paper towels then decontaminating the spill area with compatible cleanup materials.
- 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 carcinogenic materials should be disposed of as hazardous waste.

First Aid:

The manufacturer's SDS for the carcinogen used in the laboratory should be used as a reference for determining appropriate first aid measures.

Incident Response:

All laboratory emergencies should be reported to the Department of Public Safety (DPS) at 315-443-2224.

Additional Resources:

1. American Cancer Society: [List of known and probably human carcinogens](#)
2. International Agency for Research on Cancer: [Classification of cancer-causing substances](#)
3. National Toxicology Program: [Comprehensive reports on carcinogens](#)
4. Occupational Health and Safety Administration: [OSHA regulated carcinogens](#)
5. SU EHSS: [SOP Template](#)