**Laboratory Standard Operating Procedure**

Carcinogens

|  |  |
| --- | --- |
| Principal Investigator | Lab Space(s)/designated work area |
| [name] | [lab spaces (i.e. room)] |

This standard operating procedure (SOP) is intended to provide general guidance on how to safely work with chemicals or materials that are carcinogens. Section 10.0 of this document identifies lab specific carcinogen(s) and special considerations. Section 10.0 must be completed and updated as necessary by the Principal Investigator.

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**SECTION 1.0: Hazard Summary**

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.

Select Carcinogens are substances that meeting the following criteria:

* Material regulated by OSHA as a carcinogen. A list may be viewed at: <https://www.osha.gov/laws-regs/regulations/standardnumber/1910/1910.1003>
* Material listed under the category “known to be carcinogens” in the annual Report on Carcinogens published by the National Toxicology Program (NTP)
* Material listed under Group 1 (carcinogenic to humans) by the International Agency for Research on Cancer Monographs (IARC)
* Material listed in either Group 2A or 2B by IARC or under the category “reasonably anticipated to be carcinogens” by NTP and causes statistically significant tumor incidence in experimental animals.



Carcinogens may be identified by the use of the listed Health Hazard GHS Health Hazard Pictogram on containers and safety data sheets.

**SECTION 2.0: Best Practices for Safe Handling of Carcinogenic Chemicals**

* Review the chemical Safety Data Sheet, laboratory SOP, and emergency procedures before starting any work requiring the use of carcinogenic materials.
* Review lab specific experimental procedures related to the use of carcinogenic materials.
* Conduct work involving carcinogenic materials within a fume hood.
* Avoid handling carcinogenic material while working alone. At least one additional person trained in the safe handling of carcinogenic materials should be present in the general vicinity of the use area while a carcinogenic material is handled.
* Identify and demarcate all carcinogenic chemical use and storage areas by posting a hazard identification sign/posting (see Section 5.0) in the area.
* Remove all PPE and wash hands with soap and water immediately upon leaving the area where carcinogenic material is being used.
* Ensure storage containers are in good condition and compatible with the chemical.
* Use and store only the smallest practical quantities required for the experiments to be performed.
* Wipe down the area and/or equipment after each use to prevent the accumulation of chemical residue.
* Complete the online Carcinogens training module available on the EHSS website, and laboratory specific training prior to beginning experiments.

**SECTION 3.0: Control of Hazards**

**3.1 Engineering Controls**

* Use carcinogens in an EHSS inspected and functioning chemical fume hood. Sash heights must be maintained as low as possible to minimize escaping fumes and provide a physical barrier.
* Emergency eyewash stations and safety showers must be readily accessible near chemical use areas.

**3.2 Personal Protective Equipment**

* In addition to the standard laboratory attire (i.e., long pants and closed toe shoes), the following PPE is recommended:
* ANSI certified (Z87.1) chemical splash goggles
* Knee-length lab coat
* Chemically compatible gloves (Consider double gloving)
* Review Section 10.0 (Lab Specific Carcinogenic Materials and Special Considerations) for additional laboratory and chemical specific PPE requirements.
* Remove PPE immediately upon contamination and prior to leaving the use area.
* Wash hands with soap and water immediately after removing PPE.

**SECTION 4.0: Disposal and Waste Management**

* Collect all items contaminated with carcinogenic materials as hazardous waste. This includes empty chemical containers, pipette tips, wipes, and any other item that has come into contact with the chemical.
* Containerize and adhere a completed EHSS waste label to all carcinogen waste. Place waste container(s) in the satellite accumulation area.

**SECTION 5.0: Designated Use and Storage Area(s)**

* Identify and demarcate designated use areas where carcinogenic chemicals will be used and stored with an appropriate in-lab posting (An example is provided below in Figure1). A designated area may be an entire laboratory, a defined area within the laboratory, or a device such as a laboratory fume hood.

Figure 1. Carcinogen hazard warning sign



* Segregate all carcinogens from incompatible chemicals.
* Store carcinogens in secondary containment.
* Store chemicals which are carcinogenic by inhalation in vented and exhausted chemical cabinets.

**SECTION 6.0: Decontamination Procedures**

* After use, wipe down the work area and/or equipment to prevent an accumulation of chemical residue. Decontamination procedures may vary depending on the chemical in use. Consult the chemical specific manufacture’s SDS for additional information.
* All materials generated during decontamination of the work area must be treated as a hazardous waste (see section 4.0).
* Decontaminate vacuum pumps or other contaminated equipment (glassware) before removing them from the designated use area.
* Consider lining all designated use areas with disposable absorbent pads in order to contain spills and potential contamination.
* Remove absorbent pad(s) once contaminated and dispose of as hazardous waste (see section 4.0).
* Remove PPE and wash hands with soap and water immediately after handling carcinogens.

**SECTION 7.0: Emergency Response & Spill Response**

In the event of a Hazardous Material Spill or Emergency, the following procedure should be followed:

1. **Evacuate:** Immediately notify personnel in the affected area and evacuate the area.

2. **Notify:** Call DPS at 315.443.2224 from a safe location outside of the affected area.

3. **Stay:** in the safe location to meet emergency responders.

4. **Decontaminate:** Individuals exposed to a hazardous material should remove contaminated clothing and wash contaminated body area(s) with water.

5. **Do not re-enter the affected area until cleared to do so by EHSS, or emergency response personnel**

**SECTION 8.0: FIRST AID PROCEDURES**

All laboratory exposures and injuries must receive immediate first aid and medical evaluation even if the injury appears minor. Contact DPS immediately (315-443-2224, or 711 from campus landline, or #78 from mobile phone) in the event of a laboratory incident. The manufacturer’s Safety Data Sheet (SDS) for the chemical used must be available in the laboratory and used as a reference for determining appropriate first aid measures.

1. **Skin Contact:** Immediately 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. Hold eyelids open while flushing.
3. **Inhalation:** Move to fresh air. Seek medical attention immediately.
4. **Ingestion:** Seek medical attention immediately.

**SECTION 9.0: INCIDENT DOCUMENATION**

All laboratory incidents (e.g., injuries & near misses, spills, property damage, equipment failures) must be reported to EHSS. Complete the online [Incident Report Form](http://ehss.syr.edu/laboratory-safety/laboratory-incident-reporting/) as soon as it is safe to do so.

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**SECTION 10.0: Lab Specific Carcinogens and Special Considerations**

Identify all carcinogens that are located in the laboratory and provide the chemical name, CAS# and a description of the process/procedure for which the chemical will be used in the table below. If a chemical requires additional or chemical specific PPE, special considerations, and/or must be handled a specific way, provide additional information in the table.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Chemical Name** | **CAS #** | **Description of Process/Procedure**  (such as a general description of how the chemical will be used.) | **Additional PPE Required**  (such as face shields, chemical resistant aprons, rubber gloves, etc.) | **Special Considerations**  (list any unique hazards, incompatible chemicals, first aid, spill response, decontamination procedures, etc.) |
| [click to enter text] | [click to enter text] | [click to enter text] | [click to enter text] | [click to enter text] |
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