Title of SOP:	General Use SOP for Carcinogens	
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PURPOSE:

This standard operating procedure (SOP) is intended to provide general guidance on how to safely work with carcinogenic materials. This general use SOP only addresses safety issues specific to carcinogenic hazards of chemicals. In some instances, several general use SOPs may be applicable for a specific chemical (i.e., for benzene, both general use SOPs for flammables and carcinogens would apply). If you have questions concerning the applicability of any item listed in this procedure contact the Principal Investigator/Laboratory Supervisor of your laboratory or Laboratory Safety Specialist (5-4312).

SCOPE:

A carcinogen (defined as "select carcinogen" by Cal/OSHA) is a substance or agent that meets one of the following criteria:

It is regulated by OR-OSHA as a carcinogen.

It is listed under the category, "known to be carcinogens" in the Annual Report on Carcinogens published by the National Toxicology Program (NTP)(latest edition); or

It is listed under Group 1 (“carcinogenic to humans”) by the International Agency for Research on Cancer (IARC)

It is 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 in accordance with any of the following criteria:

(a) After inhalation exposure of 6-7 hours per day, 5 days per week, for a significant portion of a lifetime to dosages of less than 10 mg/m3;

(b) After repeated skin application of less than 300 mg/kg of body weight per week; or

(c) After oral dosages of less than 50 mg/kg of body weight per day.

APPLICABILITY:

Control of Hazards – General:

Although the specific SOPs will vary according to the material used, the following guidelines are generally applicable for projects involving carcinogens:

1. Use the smallest amount of chemical that is consistent with the requirements of the work to be performed.
2. Use containment devices (such as lab fume hoods or glove boxes) when: (i) volatilizing these substances, (ii) manipulating substances that may generate aerosols, and (iii) performing laboratory procedures that may result in uncontrolled release of the substance.
3. Use high efficiency particulate air (HEPA) filters, carbon filters, or scrubber systems with containment devices to protect effluent and vacuum lines, pumps, and the environment whenever feasible.
4. Use ventilated containment to weigh out solid chemicals. Alternatively, the tare method can be used to prevent inhalation of the chemical. While working in a laboratory hood, the chemical is added to a pre-weighed container. The container is then sealed and can be re-weighed outside of the hood. If chemical needs to be added or removed, this manipulation is carried out in the hood. In this manner, all open chemical handling is conducted in the laboratory hood.

PROCEDURE:

Engineering/Ventilation Controls:

Use a properly functioning lab fume hood when handling carcinogens.

If the process does not permit the handing of such materials in a fume hood, contact Environmental Health and Safety at 5-4312 for reviewing the adequacy of ventilation measures.

Personal Protective Equipment:

At minimum, safety glasses, lab coat, long pants, and closed toed shoes are to be worn when entering laboratories having hazardous chemicals. Additionally:

- When handling hazardous chemicals or contacting potentially contaminated surfaces, protective gloves are to be worn. For proper selection of glove material, review chemical MSDS and glove selection chart.
- Goggles (not safety glasses) are appropriate for processes where splash or spray is foreseeable.
- For hazardous chemicals that are toxic via skin contact/ absorption, additional protective clothing (i.e., face shield, apron, oversleeves) is appropriate where chemical contact w/ body/skin is foreseeable.

Special Handling Procedures and Storage Requirements:

Ensure secondary containment and segregation of incompatible chemicals per guidance within the PSU Chemical Hygiene Plan Also, follow any substance-specific storage guidance provided in MSDS documentation.

Spill and Accident Procedures:

Prompt response to chemical spills is critical to protect worker health & safety and to mitigate adverse affects to the environment. For further guidance, refer to "Response to Chemical Spills and Exposures".

Laboratory personnel who work with hazardous chemicals are to be provided the opportunity to receive medical attention/consultation when:

- A spill, leak, explosion or other occurrence results in a hazardous exposure (potential overexposure).
- Symptoms or signs of exposure to a hazardous chemical develop.

Waste Disposal:

Carcinogens intended for disposal are considered hazardous wastes. For general guidance regarding waste disposal, refer to: https://www.pdx.edu/environmental-health-safety/waste-management

Minimum Training Requirements:

- Chemical Safety for Laboratories
- Laboratory-specific training

Approval Required:

Consult with PI regarding need for prior approval. Laboratory personnel shall seek and the PI must provide prior approval of any chemical usage involving the following list of restricted chemicals.

Decontamination Procedures:

Personnel: Immediately after working with carcinogens, remove gloves, wash hands and arms with soap and water.

Area: Decontamination procedures vary depending on the material being handled; consult the MSDS. The toxicity of some materials can be neutralized with other reagents. All surfaces should be wiped with the appropriate cleaning agent following dispensing or handling. Waste materials generated should be treated as a hazardous waste.

Equipment: Decontaminate vacuum pumps or other contaminated equipment (glassware) before removing them from the designated area.

Designated Area:

For use of carcinogens, a designated area shall be established where limited access, special procedures, knowledge, and work skills are required. A designated area can be the entire laboratory, a specific laboratory workbench, or a laboratory hood. Designated areas must be clearly marked with signs that identify the chemical hazard and include an appropriate warning; for example: WARNING! FORMALDEHYDE WORK AREA – CARCINOGEN.

- Upon leaving the designated area, remove any personal protective equipment worn and wash hands, forearms, face, and neck.
- After each use (or day), wipe down the immediate work area and equipment to prevent accumulation of chemical residue.
- At the end of each project, thoroughly decontaminate the designated area before resuming normal laboratory work in the area.

ATTACHMENTS:

Glove Selection Chart