UCR Listed Carcinogens Program

Use Requirements

A. Regulated Area, Storage and Containment

1. The following activities must be performed in an established Regulated Area which can be an enclosed glove box or a ducted chemical fume hood with the appropriate safety controls in place as listed in the definitions:
   a. Working with any solid Listed Carcinogen (for example, mixing, weighing, etc.);
   b. Working with any Listed Carcinogen in concentrations greater than the concentrations as described in the Definitions section;
   c. High risk operations with a greater risk of exposure involving Listed Carcinogens (aerosolizing the solution, sonication, operations involving highly volatile materials, working with a stock solution that is highly concentrated);
   d. Working with large amounts of solvents that have the potential of being pre-cursors, or have previous studies indicating probable carcinogenic potential.
2. Access shall be restricted to authorized users only.
3. Fume hoods shall have an average face velocity of 150 feet per minute with no point lower than 125 feet per minute and shall be inspected at a minimum every six months.
4. Laboratory vacuum systems shall be protected with high efficiency scrubbers or with disposable absolute filters. Only high efficiency scrubbers shall be used with beta-propiolactone, bis-chloromethyl ether, methyl chloromethyl ether, or ethyleneimine.
5. Laboratories and rooms where Listed Carcinogens are used shall have ventilation that is negative with respect to the corridors and the external environment.
6. Storage locations shall be under negative pressure with required signage.
7. Work surfaces are to be protected from contamination. Plastic backed absorbent material is suggested.

B. Written Procedures

1. The principle investigator or project supervisor is required to prepare a written Safety Protocol for review. This protocol shall include the following information for each chemical carcinogen used in the laboratory:
   a. Name of principal investigator and/or project supervisor and their contact information;
   b. Names of all other personnel associated with the project and their contact information;
   c. Names, amounts, physical form, concentrations, and storage/use locations of the carcinogens involved;
   d. Proper precautions for handling during normal use, including personal protective equipment and location restrictions;
   e. A brief description of the experiment, including:
      i. Concentrations of stock and working solutions;
      ii. Techniques and equipment to assure containment;
      iii. Emergency procedures including deactivation and/or decontamination;
      iv. Personal protective measures to be employed and/or equipment to be used;
      v. Duration of the proposed project;
      vi. An appropriate means of detecting spills and contamination and decontaminating surfaces that may become contaminated with the Listed Carcinogen. This information can often be found in the Safety Data Sheet (SDS) for the chemical of concern;
      vii. Emergency procedures for spills must be specified.

C. Labels and Signs
1. All entrances to designated Listed Carcinogen work areas (Regulated Areas) should be posted with a sign stating "DANGER: Cancer Hazard". These signs are available from EH&S.

2. All primary and secondary containers, storage cabinets, glove boxes, and fume hoods containing Listed Carcinogens should be labeled with the following information:
   a. The name of the carcinogen and any other hazardous substance;
   b. Danger: Cancer Hazard;
   c. Other hazard warnings such as corrosive, flammable etc.;
   d. The date and initials of person who prepared the mixture.

D. Protective Clothing, Equipment, and employee hygiene

1. Minimum laboratory protective clothing and equipment for handling hazardous materials or animals include, but are not limited to, a laboratory coat, closed-toe/heel shoes, safety glasses, goggles and/or face shield if there is a risk of a splash hazard, and gloves if there is a risk of skin irritation, absorption or injury. Additional safety equipment and clothing requirements e.g. respiratory protection and/or disposal garments, may be required as part of a specific protocol (radiological, biological, carcinogen, or animal care and use).

2. Appropriate and necessary protective clothing and personal protective equipment (PPE) will be determined by performing a laboratory hazard assessment as part of the Injury and Illness and Prevention Plan (IIPP). The assessment is to be administered by the supervisor and employee(s).

3. Disposable gloves and sleeves are required when entering a Regulated Area. A disposable apron is recommended in case of a potential for a splash. Clothing contaminated by Listed Carcinogens should be removed immediately. Place contaminated clothing in double plastic bags, labeled with the name of the carcinogen and send to an approved industrial laundry. When clothing decontamination methods are not known or are not practical, disposable protective clothing should be worn.

4. Gloves should be selected based on the properties of the chemicals being used as well as the physical operation being performed. Multiple layers may be necessary to prevent permeation when working with a mixture. Disposable gloves shall be discarded after each use and immediately after contamination with a Listed Carcinogen. Gloves must be removed before touching doorknobs, telephones, elevator controls or in other situations where contamination could be transferred to non-laboratory areas.

5. Eye protection shall be worn in the laboratory any time chemical work is performed. Generally, proper use of engineering controls will provide sufficient protection to maintain exposure levels below Cal/OSHA permissible exposure limits. In some instances, non-routine operations may require the use of respirators. Contact EH&S for further evaluation of non-routine operations.

6. Employees shall be required to wash hands, forearms, face, and neck upon each use of a Listed Carcinogen and exit from a Regulated Area.

7. Employees working with animals in conjunction with Listed Carcinogens shall be required to shower after the last exit of the day from a Regulated Area.

E. Information and Training

1. Hazard information and safety procedures should be reviewed and updated annually with laboratory and animal care personnel who work with or who may be exposed to Listed Carcinogens. Training records should be documented with the name and signature of each attendee, the name of the trainer, the content of the class and the date. Training is generally conducted in house and provided by the PI or a laboratory supervisor, competent in the risks and hazards associated with the scope of work.

2. Training for all authorized users should include the following:
   a. A description of the use that could result in exposure including written experimental procedures;
   b. The nature of the physical and health hazards (i.e. fire, explosion, carcinogenic, toxicity) associated with exposure;
   c. Local and systemic toxicity, and review of the Safety Data Sheet for the carcinogen;
d. Engineering controls, administrative controls, personal protective equipment and laboratory or general work practices to limit exposure;
e. Employee responsibilities for following prudent laboratory practices to reduce risk of exposure;
f. Monitoring methods and observations that may be used to detect or evaluate the presence or release of a carcinogen;
g. Proper storage, labeling and disposal practices.
3. Training is required prior to the employee’s initial work with the Listed Carcinogen. Refresher training should be completed and documented at least annually.

F. Waste Management

1. Before beginning an activity that involves the use of a Listed Carcinogen, plans should be developed for the handling and disposal of contaminated wastes and surplus carcinogens.
2. Whenever practical, carcinogens should be inactivated prior to disposal as hazardous waste. It is the responsibility of the principal investigator to document the validity of the inactivation method.
3. Waste containing or contaminated with any amount of chemical carcinogen is considered hazardous unless evaluated and determined to be non-hazardous by the EH&S Waste Coordinator.
4. Before requesting a waste pick-up:
   a. Segregate carcinogen waste from other waste;
   b. Contaminated materials that are to be transferred from work areas to disposal areas should first be placed in a plastic bag, or other suitable impermeable container, and then in a primary container. Label the outer container with (i) the name of the carcinogen and (ii) "DANGER: Cancer Hazard". Labels are available from EH&S;
   c. Waste must be labeled with a standard Hazardous Waste label as well as labels stating: “DANGER: Cancer Hazard”. Labels are available from EH&S;
   d. Submit chemical waste pick-up requests via the EH&S web site. A separate form is used for sharps disposal;
   e. Spill waste must be collected, labeled and disposed as hazardous waste;
   f. Contaminated wastes and animal carcasses shall be incinerated in such a manner that no carcinogenic products are released;
   g. Mixed chemical and radiological or biological wastes require special consideration. Contact EH&S for guidance.

G. Annual Review and Self-Audits

1. Principal Investigators with Listed Carcinogens are required to conduct an annual review and self-audit of the safety practices and procedures in the lab. An e-mail reminder will be sent to the principal investigator and lab contact to notify them that an annual chemical inventory review and self-audit is due.
2. The self-audit must include:
   a. A check of engineering controls (e.g. chemical fume hood, glove box, local exhaust) and other safety equipment;
   b. Verification that the Safety Protocol is posted and followed;
   c. Verification that a current Safety Data Sheet for the carcinogen is available;
   d. Verification that materials required to cope with minor spills and other emergencies are readily available;
   e. Verification that only suitably trained and qualified personnel are performing the procedures
   f. Review of work, containment, and emergency procedures for accuracy, sufficiency, and consistency with approved protocols;
   g. A review of the inventory of chemical carcinogens.

H. Carcinogen Use in Animals

Listed Carcinogen use in animal experiments may present a significant risk of exposure to animal handlers. The Principal Investigator must take special precautions to ensure that animal handlers are not at risk of exposure to
chemical carcinogens and other hazardous materials. For example, contamination may be present on the fur or skin of an animal, in animal body fluids or excreta. Carcinogen-treated food may contaminate the floor of the animal room. Rooms housing animals treated with Listed Carcinogens must meet the same containment and engineering controls as required for laboratories.