Standard Operating Procedures

Reproductive Hazards, Carcinogens, or Acutely Toxic Chemicals

Please contact the Department of Environmental Health and Radiation Safety at x8925 prior to the initial use of reproductive hazards, carcinogens, or acutely toxic chemicals. Notification is also required following significant changes in procedures or the quantity of materials used. **The attached Notification Form may be used for this notification.**

Standard operating procedures (SOPs) are intended to provide you with general guidance on how to safely work with a specific class of chemical or hazard. This SOP is generic and it addresses the use and handling of substances by hazard class only. In some instances, multiple SOPs may be applicable for a specific chemical (i.e., both the SOPs for flammable liquids and carcinogens would apply to benzene.) If you have questions concerning the applicability of any items listed in this procedure, contact the Department of Environmental Health and Radiation Safety (X8925) or the principal investigator of your laboratory. Specific written procedures are the responsibility of the principal investigator.

If compliance with all the requirements of this standard operating procedure is not possible, the principal investigator must develop a written procedure that will be used in its place. This alternate procedure must provide the same level of protection as the SOP it replaces. The Department of Environmental Health and Radiation Safety is available to provide guidance during the development of alternate procedures.

Reproductive hazards are substances, which affect the reproductive capabilities including chromosomal damage (mutagens) and effects on the fetus (teratogens). A list of some reproductive hazards may be found in the Appendix and at http://www.usip.edu/safety/lmanual/LSlistreprod.htm.

A carcinogen commonly describes any agent that can initiate or speed the development of malignant or potentially malignant tumors, malignant neoplastic proliferation of cells, or cells that possess such material. A list of some carcinogens may be found in the Appendix and at http://www.usip.edu/safety/lmanual/LSlistcarcin.htm.

A list of acutely toxic chemicals may be found in the Appendix and at http://www.usip.edu/safety/lmanual/LSlisttoxic.htm. Select agents are acutely toxic chemicals. **However, USP is not licensed to possess select agents.**

- Manipulation of reproductive hazards/carcinogens/acutely toxic chemicals should be carried out in a fume hood. If the use of a fume hood proves impractical, special ventilation controls may be required in order to minimize exposure to the material. Fume hoods provide the best protection against exposure to reproductive hazards in the laboratory and are the preferred ventilation control device. If the use of a fume hood proves impractical attempt to work in a glove box or on an isolated area of the bench top.

  If available, consider using a Biological Safety Cabinet (BSC). The BSC is designed to remove particulates (the reproductive hazard, the carcinogen or the acutely toxic chemical) before the air is discharged into the environment. Reproductive hazards/carcinogen/acutely toxic chemicals that are volatile must **not** be used in a biological safety cabinet unless the cabinet is vented to the outdoors. (None of USP's BSCs are vented to the outdoors.)

  Certain reproductive hazards/carcinogens/acutely toxic chemicals must be handled in a glove box rather than a fume hood. The principal investigator or the Department of Environmental Health and Safety will determine if this is required.

- The room sign for the laboratory must contain a “Reproductive Hazard” or “Cancer Hazard”, or “Toxic Chemical Hazard” sign. (available in the Griffith Hall and the McNeil Science & Technology Center Stockrooms)

  All areas within the laboratory where reproductive hazards/carcinogens/acutely toxic chemicals are handled or stored should be demarcated with designated area tape or the appropriate hazard sign (available in the Griffith Hall and the McNeil Science & Technology Center Stockrooms). This includes all fume hoods and bench tops where the reproductive hazards/carcinogens/acutely toxic chemicals are handled.

  All containers of reproductive hazards/carcinogens/acutely toxic chemicals must be clearly labeled with the correct chemical name. Chemical formulas and structural formulas are not acceptable.

- Wash hands and arms with soap and water immediately after handling reproductive hazards/carcinogens/acutely toxic chemicals.

  Decontamination procedures vary depending on the material being handled. 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 should be treated as hazardous waste.

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

- Emergency procedures that address response actions to fires, explosions, spills, injury to staff, or the development of signs and symptoms of overexposure must be developed. The procedures should address at a minimum the following:

  Who to contact: (Principal Investigator of the Laboratory including evening phone number, Public Safety and Security at x7000, 9-911, Department of Environmental Health and Safety at x8925)

  The location of all safety equipment and the proper use. (showers, eyewash, spill control equipment and PPE, fire extinguishers, etc.)

  The method used to alert personnel in nearby areas and responding Public Safety and Security personnel of potential hazards.

  Special first aid treatment required for the type of reproductive hazard/carcinogen/acutely toxic chemical.

- Eye protection in the form of safety glasses must be worn at all times when handling reproductive hazards/carcinogens/acutely toxic chemicals. Ordinary (street) prescription glasses do not provide adequate protection. Adequate safety glasses must meet the requirements of the American Standard Practice for Occupational and Educational Eye and Face Protection (ANSI Z.87.1 1989) and must be equipped with side shields. Safety glasses with side shields do not provide adequate protection from splashes; therefore, when the potential for a splash hazard exists other eye protection and/or face protection must be worn.

- Where the eyes or body of any person may be exposed to reproductive hazards/carcinogens/acutely toxic chemicals, suitable facilities for quick drenching or flushing of the eyes and body shall be provided within the work area for immediate emergency use. Bottle type eyewash stations are not acceptable. Additionally, a safety shower should be available in a nearby location. Remember to flush your eyewash once a week for a minimum of 3 minutes to prevent build-up of amoeba and bacteria.

- Gloves should be worn when handling reproductive hazards/carcinogens/acutely toxic chemicals. Disposable nitrile gloves provide adequate protection against accidental hand contact with small quantities of most laboratory chemicals. However, the handling of some acutely toxic chemicals will require chemical resistant gloves. Lab workers should contact the Department of Environmental Health and Safety for advice on chemical resistant glove selection when direct or prolonged contact with hazardous chemicals is anticipated. (Review the MSDS.)

- Use care when weighing solids to avoid the creation of aerosols. Use the smallest amount of chemical that is consistent with the requirements of the work to be done. Whenever possible, substitute less hazardous chemicals for these more hazardous chemicals.

- A hazard assessment should be conducted by the Principal Investigator and should focus on education of laboratory workers concerning the health risks posed by reproductive hazards/carcinogens/acutely toxic chemicals, proper use and handling procedures, proper use of personal protective equipment, emergency and waste procedures, and the demarcation of designated areas.

- Lab coats, closed toe shoes and long sleeved clothing should be worn when handling reproductive hazards/carcinogens/acutely toxic chemicals. Additional protective clothing should be worn if the possibility of skin contact is likely. Avoid exposure through inhalation, ingestion, and absorption through the skin and eyes.

- Safety shielding is required any time there is a risk of explosion, splash hazard, or a highly exothermic reaction. All manipulations of reproductive hazards/carcinogens/acutely toxic chemicals that pose this risk should be performed in a fume hood with the sash in the lowest position. Also, portable shields may be used for protection.

- Reproductive hazards/carcinogens/acutely toxic chemicals must be stored in a designated area.

- Anticipate spills by having the appropriate clean-up equipment on hand. The appropriate clean-up supplies can be determined by consulting the material safety data sheet and other sources. This should occur prior to the use of any reproductive hazards/carcinogens/acutely toxic chemicals. View Section IV or http://www.usip.edu/safety/smanual/SMchemspill.htm for information on chemical spills.

- Evacuated glassware can implode and eject flying glass, and splattered chemicals. Vacuum work involving reproductive hazards/carcinogens/acutely toxic chemicals must be conducted in a fume hood, glove box or isolated in an acceptable manner.

  Mechanical vacuum pumps must be protected using cold traps and, where appropriate, filtered to prevent particulate release. The exhaust for the pumps must be vented into an exhaust hood.

- All materials contaminated with reproductive hazards/carcinogens/acutely toxic chemicals should be disposed of as a hazardous waste. Wherever possible, attempt to design research in a manner that reduces the quantity of waste generated. Contact the Department of Environmental Health and Safety at x8925 if there are any questions on the proper storage and disposal of waste.

Link to the International Agency for Research on Cancer (http://www.iarc.fr/)

Link to the National Toxicology Program (NTP), “Annual Report of Carcinogens” (http://ntp.niehs.nih.gov)

Notification of the Use of Reproductive Hazards, Carcinogens, or Acutely Toxic Chemicals

Please complete this form, sign, and return to the Department of Environmental Health and Radiation Safety, Box #85.

Principal Investigator:_____

Room/Building:_____

Phone:_____

Department:_____

In accordance with the requirements of the Laboratory Safety Manual (Chemical Hygiene Plan), this document serves as notification to the Department of Environmental Health and Safety of the use of the following class(es) of chemicals: (Please list the name(s) of the chemical(s) below.)

Carcinogens or Suspected _____
_____
_____

Reproductive Hazards _____
_____
_____

Acutely Toxic Chemicals _____
_____
_____

I have reviewed the applicable Standard Operating Procedures and the Laboratory Safety Manual (Chemical Hygiene Plan) http://www.usip.edu/safety/lmanual/index.htm as they apply to reproductive hazards, carcinogens, and/or acutely toxic chemicals and have complied with all applicable requirements, where appropriate.

Print Name:_____ **Date**:_____

Signature:_____

Principal Investigator Signature (if different):_____