

ACUTELY TOXIC CHEMICALS STANDARD OPERATING PROCEDURE

HAZARDOUS CHEMICALS/CLASS OF HAZARDOUS CHEMICALS

- Toxic chemicals are defined as those with an LD50 value for oral exposure in rats of 50-500 mg/kg, for skin contact in rabbits of 200-100 mg/kg, or for inhalation exposure in rats of 200-2000 ppm/air.
- Highly toxic chemicals are defined as those with an LD50 value for oral exposure in rats of less than 50500 mg/kg, for skin contact in rabbits of less than 200100 mg/kg, or for inhalation exposure in rats of less than 2002000 ppm/air.

HAZARD DESCRIPTION

- Acutely toxic chemicals can cause severe illness and sometimes death.

PROTECTION PROCESS

- Good laboratory technique
- Appropriate shielding through use of personal protective equipment
- Use of fume hood
- Availability of eye wash station and safety shower

PERSONAL PROTECTIVE EQUIPMENT

- Safety glasses/goggles (Wear chemical safety goggles when using small quantities or safety glasses or chemical safety goggles with face shield when using large quantities or when a splash potential exists.)
- Gloves should be worn when handling acutely toxic chemicals. Disposable latex or nitrile gloves provide adequate protection against accidental hand contact with small quantities of most laboratory chemicals. Lab workers should contact OEHS for advice on chemical resistant gloves when direct or prolonged contact with hazardous chemicals is anticipated.
- Lab coats, closed toed shoes and long sleeved clothing should be worn when handling corrosive materials.
- Additional protective clothing should be worn if the possibility of skin contact is likely.

ENGINEERING/VENTILATION CONTROLS

- Manipulation of acutely toxic chemicals should be carried out in a fume hood whenever possible.
- Under certain conditions, acutely toxic chemicals can be used in a Biological Safety Cabinet. The biological safety cabinet is designed to remove the acutely toxic chemicals before the air is discharged into the environment. Acutely toxic chemicals that are volatile must not be used in a biological safety cabinet unless the cabinet is vented to the outdoors.
- Certain acutely toxic chemicals must be handled in a glove box rather than a fume hood. The Division of Environmental Health and Safety (2-1284) or the Principal Investigator will determine if this is required.
- For small quantities of acutely toxic chemicals, portable shields, which provide protection to all laboratory occupants, are acceptable.
- A safety shower and eyewash must be available and accessible when working with acutely toxic chemicals.

SPECIAL HANDLING PROCEDURES AND STORAGE REQUIREMENTS

- All acutely toxic chemicals must be clearly labeled with the correct chemical name.
- Do not store acutely toxic materials on high cabinets or shelves.
- Acutely toxic chemicals must be stored in a designated area.
- The room sign where acutely toxic chemicals are stored must contain a “Designated Areas Within” identifier.

SPELL AND ACCIDENT PROCEDURES

- Before beginning work with acutely toxic chemicals, develop emergency procedures which address response actions to fires, explosions, spills, injury to staff, or the development of signs and symptoms of overexposure. The procedures should address as a minimum the following:
 - Who to contact: (University police, and Office of Environmental Health and Safety,
 - Principal investigator of the laboratory including evening phone number)
 - The location of all safety equipment (showers, spill clean up supplies, eye wash, fire extinguishers, etc.)
 - The method used to alert personnel in nearby areas of potential hazards
 - Special first aid treatment required by the type of corrosive material(s) handled in the laboratory
- Anticipate spills by having clean up equipment on hand. The appropriate clean up supplies can be determined by consulting the material safety data sheet. This should occur prior to the use of any acutely toxic chemical.
- In the event of a spill, all personnel in the area should be alerted.
- Do not attempt to handle a spill of acutely toxic chemicals. Vacate the laboratory immediately and call for assistance (Division of Environmental Health & Safety 292-1284 or 911).
- Remain on the scene, but at a safe distance, to receive and direct safety personnel when they arrive.

WASTE DISPOSAL

- All materials contaminated with 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.
- Questions regarding waste pick up should be directed to the Office of Environmental Health and Safety. This office can also assist you in minimizing waste generation.

SPECIAL APPROVAL REQUIRED

- The College of Pharmacy Safety Committee must approve work with acutely toxic chemicals.
- You should notify the Office of Environmental Health and Safety prior to the initial use of acutely toxic substances. Use the form in Appendix F for this purpose. Notification is also required following significant changes in procedures or the quantity of materials used.

DECONTAMINATION

Personnel:

- Wash hands and arms with soap and water immediately after handling acutely toxic chemicals.

Area:

- 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 generated should be treated as a hazardous waste.

Equipment:

- Decontaminate glassware, vacuum pumps, etc. before removing them from the designated area.

DESIGNATED AREA

- All locations within the laboratory where acutely toxic chemicals are handled should be demarcated with designated area caution tape (available from OEHS, the Cell Center, or Chemistry stockroom) and/or posted with designated area caution signs. This includes all fume hoods and bench tops where the acutely toxic chemicals are handled.
- Where feasible acutely toxic chemicals should be manipulated over plastic-backed disposable paper work surfaces. These disposable work surfaces minimize work area contamination and simplify clean up.
- The room sign for the laboratory must contain a “Designated Areas Within” identifier.