

**SAN DIEGO STATE UNIVERSITY
ENVIRONMENTAL HEALTH & SAFETY DEPARTMENT**

**STANDARD OPERATING PROCEDURES
REPRODUCTIVE HAZARDS**

Standard operating procedures (SOP) 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 in nature. 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 Environmental Health & Safety Department (619) 594-6778 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.

Reproductive hazards are substances which affect the reproductive capabilities including chromosomal damage (mutagens) and effects on the fetus (teratogens).

Hazard assessment

Hazard assessment should focus on proper handling techniques, education of laboratory workers concerning the health risks posed by reproductive hazards, and the demarcation of designated areas.

EH&S Notification

You should notify Environmental Health & Safety Department prior to the initial use of reproductive hazards. Notification is also required following significant changes in procedures or the quantity of materials used.

Special storage

Reproductive hazards must be stored in a designated area.

Designated area

The room sign for the laboratory must contain a *Designated Areas Within* identifier.

All locations within the laboratory where reproductive hazards are handled should be demarcated with designated area caution and/or posted with designated area caution signs. This includes all fume hoods and bench tops where the reproductive hazards are handled.

Where feasible, reproductive hazards should be manipulated over plastic-backed disposable paper work surfaces. These disposable work surfaces minimize work area contamination and simplify clean up.

Securing of gas cylinders

Not applicable

Eye protection

Eye protection in the form of safety glasses must be worn at all times when handling reproductive hazards. Ordinary (street) prescription glasses do not provide adequate protection. (Contrary to popular opinion these glasses cannot pass the rigorous test for industrial safety glasses.) 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.

Eyewash

Where the eyes or body of any person may be exposed to reproductive hazards, 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.

Respiratory protection

Fume hood

Manipulation of reproductive hazards should be carried out in a fume hood. If the use of a fume hood proves impractical refer to the section on special ventilation.

All areas where reproductive hazards are stored or manipulated must be labeled as a designated area.

Glove (dry) box

Certain reproductive hazards must be handled in a glove box rather than a fume hood. The Office of Environmental Health and Safety (619) 592-6778 or the Principal Investigator will determine if this is required.

Special ventilation

Manipulation of reproductive hazards outside of a fume hood may require special ventilation controls 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. When possible, handle reproductive hazards in a fume hood. 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. The biological safety cabinet is designed to remove particulates (the reproductive hazard) before the air is discharged into the environment. Reproductive hazards that are volatile must not be used in a biological safety cabinet unless the cabinet is vented to the outdoors.

If your research does not permit the handling of reproductive hazards in a fume hood, biological safety cabinet, or glove box, you must contact the Environmental Health & Safety Department (619) 594-6778.

All areas where reproductive hazards are stored or manipulated must be labeled as a designated area.

Protective apparel

Lab coats, closed toed shoes and long sleeved clothing should be worn when handling reproductive hazards. Additional protective clothing should be worn if the possibility of skin contact is likely.

Safety shielding

Safety shielding is required any time there is a risk of explosion, splash hazard or a highly exothermic reaction. All manipulations of reproductive hazards which pose this risk should be performed in a fume hood with the sash in the lowest feasible position. Portable shields, which provide protection to all laboratory occupants, are acceptable.

Gloves

Gloves should be worn when handling reproductive hazards. Disposable nitrile gloves provide adequate protection against accidental hand contact with small quantities of most laboratory chemicals. Lab workers should contact EH&S for advice on chemical resistant glove selection when direct or prolonged contact with hazardous chemicals is anticipated.

Safety shower

A safety or drench shower should be available in a nearby location where the reproductive hazards are used.

Signs and labels

Doorways: The room sign must contain a Designated Area Within Caution where carcinogens, reproductive hazards, and/or acutely toxic chemicals are stored or used.

Containers: All containers of reproductive hazards must be clearly labeled with the correct chemical name. Handwritten labels are acceptable; chemical formulas and structural formulas are not acceptable.

Vacuum protection

Evacuated glassware can implode and eject flying glass, and splattered chemicals. Vacuum work involving reproductive hazards 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.

Waste disposal

All materials contaminated with reproductive hazards 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 Environmental Health & Safety Department. This office can also assist you in minimizing waste generation.

Decontamination procedures

Personnel: Wash hands and arms with soap and water immediately after handling reproductive hazards.

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 hazardous waste.

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

Spill response

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. This should occur prior to the use of any reproductive hazard.

In the event of a spill, alert personnel in the area that a spill has occurred. Do not attempt to handle a spill of reproductive hazards. Vacate the laboratory immediately and call for assistance.

- Environmental Health & Safety Department (619) 594-6778
- San Diego State University Public Safety Department Emergency Number (619) 594-1991 or 911 from a campus phone.

Remain on the scene, but at a safe distance, to receive and direct safety personnel when they arrive.

Emergency procedure

Emergency procedures which address response actions to fires, explosions, spills, injury to staff, or the development of sign and symptom of overexposure must be developed. The procedures should address as a minimum the following:

Who to contact: (University police, Environmental Health & Safety Department (619) 594-6778, Principal investigator of the laboratory including evening phone number)

The location of all safety equipment (showers, eye wash, fire extinguishers, etc.)

The method used to alert personnel in nearby areas of potential hazards

The location and quantity of all reproductive hazards stored in the laboratory

Special first aid treatment required by the type of reproductive hazards handled in the laboratory

Name	CAS#	Name	CAS#
Acetaldehyde	75-07-0	Hydrazine(s)	302-01-2
Arsenic	7440-38-2	Hexafluoroacetone	684-16-2
Aniline	62-53-3	Halothane	151-67-7
Aflatoxins		Karathane	131-72-6
Benzene	71-43-2	Lead (inorganic compounds)	7439-92-1
Benzo(a)pyrene	50-32-8	2-Methoxyethanol	109-86-4
Carbon disulfide	75-15-0	2-Methoxyethyl acetate	110-49-6
Chloroform	67-66-3	Methyl chloride	74-87-3
Chloroprene	126-99-8	N-Methyl-2-pyrrolidone	872-50-4
Dimethyl formamide	68-12-2	Propylene glycol monomethyl ether	107-98-2
Di-sec-octyl-phthalate	117-81-7	Propylene glycol monomethyl ether acetate	108-65-6
Dinitrooctyl phenol	63149-81-5	Propylene oxide	75-56-9
Dithane	111-54-6	Trichloroethylene	79-01-6
2-Ethoxy ethanol	110-80-5	RH-7592	
2-Ethoxyethyl acetate	111-15-9v	Systhane/RH-3866	88671-89-0
Ethylene thiourea	96-45-7	TOK (herbicide)	1836-75-5
2-Ethyhexanol	104-76-7	Toluene	108-88-3
Glycol ethers		Vinyl chloride	75-01-4

Table1. Chemicals with Reproductive Hazards