

STANDARD OPERATING PROCEDURE FOR ACUTE TOXICANTS



USC University of
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NATURE OF HAZARD

The OSHA/GHS hazard class reproductive toxicity covers substances which may have adverse effects on sexual function or fertility in adult males or females, or which may have adverse effects on the development of offspring. The class effects on or via lactation covers substances which may interfere with lactation or which may have an adverse effect on a breastfed child through being excreted in breast milk, either unchanged or as harmful metabolites. The class germ cell mutagenicity covers substances which may give rise to genetic changes heritable via mutated sperm or eggs. For the purposes of lab safety, the three hazard classes are often lumped together under the generic term reproductive toxicants. Throughout this SOP, the term reproductive toxicant is used in this broad sense, except where context makes it obvious that reproductive toxicant is referring to the specific OSHA/GHS hazard class.

Reproductive toxicants act on the body by all routes of exposure (absorption through skin/eyes/mucous membranes, injection under skin, ingestion, inhalation as dust, droplets, or vapor).

PARTICULARLY HAZARDOUS SUBSTANCES (PHS)

- Reproductive toxicants fall under the Cal-OSHA definition of Particularly Hazardous Substances (PHS) which require additional precautions in use ([8 CCR §5191](#)). Please refer to the [Chemical Hygiene Plan](#) (CHP; Sections 6 and 8) for more information on the classification and identification of PHS, and safe practices for working with these materials.

HAZARD IDENTIFICATION

Classification and identification of reproductive toxicants is covered in Section 6 of the CHP, and in a referenced table in the appendices. All personnel who agree to abide by this SOP are required to familiarize themselves with the contents of Section 6 of the CHP.

For purchased chemicals, identification as a reproductive toxicant should be made by assessing hazard information given in the safety data sheet (SDS) against the criteria given in the CHP subsection Particularly Hazardous Substances (towards the end of Section 6). If the SDS does not list the material as reproductively toxic, the material may still be a reproductive toxicant according to California Proposition 65; check the official list to confirm (<https://oehha.ca.gov/proposition-65/proposition-65-list>).

In conformance with hazard communication regulations, mixtures shall be classified as germ cell mutagens if they contain ≥ 0.1 % w/w category 1A/IB mutagen or ≥ 1.0 % w/w category 2 mutagen. Mixtures shall be classified as reproductively toxic if they contain ≥ 0.1 % w/w of a category 1 or 2 reproductive toxicant. Mixtures shall be classified as having an effect via lactation if ≥ 0.1 % w/w of material having an effect via lactation is present.

Newly synthesized substances for which adequate safety data is not available shall be considered as PHS if there is any suspicion they might be reproductive toxicants based on chemical reactivity or structural analogies to known reproductive toxicants, mutagens, or substances having an adverse effect via lactation.

PREPARATION

- Do not handle Reproductive Toxicants while working alone in the cleanroom area.
- Remove hand and wrist jewelry. Do not wear contact lens (Contact lens are not permitted in the cleanroom).
- Identify the locations of safety equipment (Eyewash and Shower station, Hazardous Waste Container, Emergency buttons and Phones).
- Save DPS emergency line 213-740-4321 into personal phone.
- Read the Safety Guideline and Material Safety Data Sheet for specific Reproductive Toxicants
- Wear all appropriate PPE (Chemical Goggles, Face Shield for operations with splash hazard, Two layers of nitrile gloves, Butyl Gloves, Neoprene Gloves, Chemical Resistant Apron and Boot Covers).
- Ensure an adequate supply of clean-up material is within reach in case of spills.
- Ensure an appropriate waste container is accessible to dispose contaminated clean-up material.
- For more hazardous work involving Reproductive Toxicants, restrict access to work area with sign labelled "Warning - Reproductive Toxicant".
- Use only the minimal amounts of Reproductive Toxicant. Reproductive Toxicants must be handled under a fume hood.
- Clearly label all containers with any liquids, including containers with water. Place containers with Reproductive Toxicants into secondary polypropylene container while not in use.
- Labels must include User Name, Group (PI) Name, Contact Email or Phone Number, Chemical Name, and Chemical Formula.

WASTE DISPOSAL

- Wash all beakers and cylinders used in handling.
- Wipe down and dry all surfaces.
- Store waste in containers labelled "CHEMICAL/HAZARDOUS WASTE FOR DISPOSAL."

SKIN AND EYE EXPOSURE

- For skin exposure, immediately flush with cool water for a minimum of 15 minutes. Remove contaminated clothing and footwear while rinsing.
- For eye exposure, forcibly hold eyes open and flush for at least 15 minutes. Continue flushing area with water if pain continues.
- Do not use neutralizing chemicals, creams, abrasives, or lotions.
- Contact DPS and alert cleanroom staff.

INHALATION EXPOSURE

- Move to location with fresh air.
- Obtain medical attention immediately if symptoms develop (coughing, shortness of breath, wheezing, burning in mouth or throat, or chest pain).
- Alert cleanroom staff and call DPS for medical assistance.

INGESTION

- Alert cleanroom staff and call DPS for medical assistance.
- If possible, determine what material was ingested by victim.
- If victim begins to vomit, turn head or entire body to one side to avoid choking.
- Do not induce the victim to vomit or drink any beverage unless instructed to by qualified medical personnel.

ACCIDENTAL SPILLS

- Minor spills can be cleaned with a spill kit or simple items like wipes or absorbent pads.
- For all spill emergencies, contact DPS and alert cleanroom staff.
- Evacuate personnel from spill area and deny entry.

UNATTENDED EXPERIMENTS

- Chemicals may not be left unattended for more than 15 minutes.
- For unattended experiments longer than 15 minutes, notify cleanroom staff to get permission.
- The maximum time for unattended chemicals is one hour.
- Unattended chemicals require displayed signage at fume hood.
- The sign must contain the hazards of the experiment, the experimenter's name and contact information, responsible PI's name and contact information, expected date and time of disposal.
- For more information on unattended hazardous experiments, please refer to the [Unattended Hazardous Operations Fact Sheet](#).

EMERGENCY NOTIFICATION

- Notify the Department of Public Safety (DPS) at (213) 740-4321 or (323) 442-1000. For a non-emergency, dial (213) 740-6000.
- State the nature of the emergency (e.g., injury, hazardous materials or biohazards spill, fire) and provide details.
 - a) Location of injury/incident
 - b) Name(s) of injured and name(s) of witness(es)

- c) Contact information (your name and call-back number)
- d) Injury/incident summary
- Notify EH&S immediately at (323) 442-2200 or injuryprevention@usc.edu to report the injury/incident.
- Notify the cleanroom staff and your supervisor.

EXAMPLES OF ACUTE TOXICANTS

Acrolein, hydrogen cyanide, osmium tetroxide, arsine, hydrogen fluoride, ozone, chlorine, methyl fluorosulfonate, phosgene, diazomethane, nickel carbonyl, sodium azide, diborane (gas), nitrogen dioxide, sodium cyanide

References

- [SOP – Acute Toxicants | USC Environmental Health & Safety](#)
- [Chemical Hygiene Plan](#)

Contributors	Revised Date
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