

Principal Investigator: _____

Date Approved: _____

This document covers basic chemical safety information for acute toxicants. The use of any acutely toxic chemical is subject to pre-approval by the Principal Investigator (PI) and/or Supervisor. DO NOT USE ACUTE TOXICANTS UNTIL YOU HAVE OBTAINED THE NECESSARY PRE-APPROVAL.

Acute Toxicants

Refer to the University of Arkansas Chemical Hygiene Plan for a description of chemicals that will be considered as a Particularly Hazardous Substance (PHS) Acute Toxics and Toxins.

Chemicals that meet the definition of a PHS acute toxicity must be used only in a designated area where limited access, special procedures, knowledge, and work skills are required. A designated area can be the entire laboratory, a specific laboratory workbench, or a laboratory hood. Designated areas must be clearly marked with signs that identify the chemical hazard and include an appropriate warning; for example: WARNING! TOXINS WORK AREA



Acute toxicants are chemicals that pose a high level of immediate health risk to individuals.

Acute toxicants may enter the body via four routes: **ingestion, skin absorption, injection** and **inhalation**. With each route of exposure, the likelihood of injury depends on the toxicity of the chemical involved, the concentration of the material, and the duration of contact. Under the Globally Harmonized System (GHS), they are classified as follows:

Routes of Exposure		Toxicity Range		Hazard Statement
		Category 1	Category 2	
Oral (mg/kg body weight)		$LD_{50} \leq 5$	$LD_{50} > 5 \text{ and } \leq 50$	Fatal if swallowed
Dermal (mg/kg body weight)		$LD_{50} \leq 50$	$LD_{50} > 50 \text{ and } \leq 200$	Fatal in contact with skin
Inhalation	Gases (ppm)	$LC_{50} \leq 100$	$LC_{50} > 100 \text{ and } \leq 500$	Fatal if inhaled
	Vapors (mg/L)	$LC_{50} \leq 0.5$	$LC_{50} > 0.5 \text{ and } \leq 2.0$	
	Dust (mg/L)	$LC_{50} \leq 0.05$	$LC_{50} > 0.05 \text{ and } \leq 0.5$	

Exposure, Signs and Symptoms and Chemical Properties

Review the appropriate sections of the chemical specific Safety Data Sheet (SDS) for information on ways to detect exposure, appropriate exposure limits, signs and symptoms of exposures and chemical properties. If data is lacking in any area, refer to the following sites for additional information:

<https://pubchem.ncbi.nlm.nih.gov/>

<https://druginfo.nlm.nih.gov/drugportal/>

<https://toxnet.nlm.nih.gov/index.html>

<http://web.doh.state.nj.us/rtkhsfs/indexfs.aspx>

Always use the smallest amount of chemical that is consistent with the requirements of the work performed. Understand the chemical properties and what are the likely routes of exposure based on those properties and the procedures to be performed. Use containment devices (e.g., fume hood, glove box) when substance can volatilize, when the substance is manipulated, whenever aerosols or particulates may be produced, or when an action may result in an uncontrolled release.

Contact Environmental Health and Safety (EHS) if there are any questions (479-575-5448).

Personal Protective Equipment (PPE) & Personnel Monitoring



Lab Coat

Chemical/Flame resistant



Gloves

Nitrile or neoprene gloves typically provide adequate protection against minor splashes. Consult with your PI or supervisor to determine whether any materials involved in your process require alternative hand protection.



Eye Protection

ANSI Z87.1-compliant safety glasses or safety goggles if a splash hazard is present

Labeling & Storage

Store away from other materials that are chemically incompatible. Each container's label must include a skull-and-crossbones pictogram and identify the material as acutely toxic. Containers of acute toxicants must be stored in leak-proof secondary containment within a Designated Area. The secondary container's label must include an appropriate pictogram and identify the material as acutely toxic. Also, if not plainly visible (e.g. through a cabinet window), labeling must be applied to storage locations where these are stored to avoid an inadvertent encounter.

Engineering Controls, Equipment & Materials

Fume Hood

Use a fume hood (or equivalent) to keep exposure to toxins as low as possible. If your protocol does not permit the handling of such materials in a fume hood, contact EH&S (479-575-5448) to perform an exposure assessment to determine whether alternative engineering controls or additional respiratory protection is required.

Housekeeping

Spills	Notify others in the area of the spill, including your supervisor. Evacuate the location where the spill occurred. Call 911 and report any exposure to EHS (479-575-5448). Remain on-site (at a safe distance) to provide detailed information to first responders.
Decontamination	After each use (or day), wipe down the immediate work area and equipment to prevent accumulation of chemical residue. Decontaminate workspace with appropriate materials (refer to the SDS). When finished wash hands and arms with soap and water and properly dispose of all wastes. Contaminated items (e.g., solid and liquid materials and PPE) should be discarded as hazardous waste.
Waste	Refer to the UA Chemical Hygiene Plan for details and contact EHS (479-575-5448) for specific disposal instructions.

First Aid & Emergencies

Skin or Eye Contact	Remove contaminated clothing and accessories; flush affected area for at least 15 minutes with water. If symptoms persist, get medical attention/call 911.
Inhalation	Move person into fresh air. If symptoms persist, get medical attention/call 911.
Ingestion	Rinse mouth with water. If symptoms persist, get medical attention/call 911.

Attachments: Chemical Specific Safety Data Sheet (SDS)

Note: If you have more than one chemical that classifies as a PHS based on acute toxicity; include all appropriate SDSs with this SOP.

Authorized and Trained Personal

Name	Signature	Date