This document covers basic chemical safety information for acute toxicants and supplements the laboratory Chemical Hygiene Plan as appropriate. The use of any acutely toxic chemical is subject to pre-approval by the Principal Investigator (PI) and/or designated Laboratory Responsible Safety Person. DO NOT USE ACUTE TOXICANTS UNTIL YOU HAVE OBTAINED THE NECESSARY PRE-APPROVAL.

Acute Toxicants

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	Pictogram
		Category 1	Category 2		
Oral (mg/kg body weight)		$LD_{50} \leq 5$	$LD_{50} > 5$ and ≤ 50	Fatal if swallowed	
Dermal (mg/kg body weight)		$LD_{50} \leq 50$	$LD_{50} > 50$ and ≤ 200	Fatal in contact with skin	
Inhalation	Gases (ppm)	$LC_{50} \leq 100$	$LC_{50} > 100$ and ≤ 500	Fatal if inhaled	
	Vapors (mg/L)	$LC_{50} \leq 0.5$	$LC_{50} > 0.5$ and ≤ 2.0		
	Dust & Mists (mg/L)	$LC_{50} \leq 0.05$	$LC_{50} > 0.05$ and ≤ 0.5		

Personal Protective Equipment & Personnel Monitoring

Lab Coat

Traditional lab coat or flame-resistant lab coat when working with flammable materials.

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, or have a methodology to distinguish these, from other materials that are not particularly hazardous, or which may be chemically incompatible. Each container's label must include a skull-and-crossbones pictogram and identify the material as acutely toxic. It is recommended that containers of acute toxicants be stored in leak-proof secondary containment within a Designated Area. The secondary container's label must include a skull-and-

crossbones pictogram and identify the material as acutely toxic. Also, if not plainly visible (e.g. through a cabinet window), labelling must be applied to storage locations where these are stored to avoid an inadvertent encounter.

Engineering Controls, Equipment & Materials	
Fume Hood	It is advisable to use a fume hood when working with materials which are toxic by inhalation. If your protocol does not permit the handing of such materials in a fume hood, contact the Department of Environmental Health, Safety, and Sustainability (EHSS) to determine whether additional respiratory protection is warranted.
Housekeeping	
Spills	Notify others in the area of the spill, including your PI/Responsible Safety Person. If it is a small spill that you can easily handle, use the contents of your lab spill kit to clean it up. If it is a large spill, then evacuate the area where the spill occurred. Call Vanderbilt University Public Safety (VUPS) at (625) 421-1911 from your cell phone or use the VandySafe app on your smart phone. Report any exposure through Risk and Insurance Management's Origami portal and mark that it occurred in research when prompted. Both VUPS and the Origami system will notify EHSS of the incident. Remain on site at a safe distance to provide detailed information to first responders.
Decontamination	Decontamination methods will vary based on the materials handled and equipment being used. Please review the chemical Safety Data Sheet for guidance on cleaning materials. Dispose of the used chemical and contaminated disposables as hazardous waste following the guidelines in the CHP.
Waste	Refer to the laboratory Chemical Hygiene Plan (Section 6.7) for information on proper chemical waste disposal procedures. Please note that some Acute Toxicant waste may be considered Extremely Hazardous.
First Aid & Emergencies	
Skin Contact	Immediately remove contaminated clothing and shoes; flush skin with water for at least 15 minutes. Get medical attention immediately.
Eye Contact	Check for and remove contact lenses. Immediately flush eyes with water for at least 15 minutes. Get medical attention immediately.
Inhalation	Move person into fresh air. Get medical attention immediately.
Ingestion	Get medical attention immediately.

Name	Signature	Date