Principal Investigator: Date Approved:

This document covers basic chemical safety information for target organ toxicants. The use of any target organ toxicant is subject to pre-approval by the Toxic Substance Committee. DO NOT USE TARGET ORGAN TOXICANTS UNTIL YOU HAVE OBTAINED THE NECESSARY APPROVAL.

Specific Target Organ 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).

Chemicals that meet the definition of a PHS target organ toxicant 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! PHS (TARGET ORGAN TOXICANTS) WORK AREA

Substances which cause damage to target organs are considered to be toxic, and are indicated under GHS by the health hazard pictogram and a hazard statement which specifies "damage to organs."

Specific target organ toxicity (single exposure) (STOT-SE) means specific non-lethal effects on organs or organ systems in the body following single exposure to a chemical. All significant health effects that can impair function, whether reversible or irreversible, occurring immediately after exposure or following a delay, are included in this category of hazard

These include:
• Hepatotoxins – substances that damage the liver (e.g. nitrosamines, carbon tetrachloride)
• Nephrotoxins – substances that damage the kidneys (e.g. certain halogenated hydrocarbons)
• Neurotoxins – substances that damage the nervous system (e.g. mercury, acrylamide, carbon disulfide)
• Hematopoietic agents – substances that decrease hemoglobin function and deprive the body tissues of oxygen (e.g. carbon monoxide, cyanides)
• Respiratory Toxicants – Substances that damage lung tissue (e.g. asbestos, silica)

Specific organ toxicity can occur by any route of exposure that is relevant to humans, usually by swallowing, by absorption through the skin, or by breathing the substance

Exposure, Signs and Symptoms and Chemical Properties

Symptoms of exposure to toxic and acutely toxic materials vary.

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 appropriate pictograms and identify the material as a target organ toxicant. Containers of these materials must be stored in leak-proof secondary containment within a Designated Area. The secondary container's label must include appropriate pictograms and identify the material as a target organ toxicant. 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 materials as low as possible. If your protocol does not permit the handing 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 there is more than one chemical that classifies as a PHS based on specific target organ toxicity; include all appropriate SDSs with this SOP.

Authorized and Trained Personal

Name	Signature	Date