VANDERBILT UNIVERSITY

Principal Investigator: Date Approved:

This document covers basic chemical safety protocols (CSP) for phosgene and supplements the laboratory Chemical Hygiene Plan as appropriate. Additional lab-specific safety operating procedures for phosgene may also be required. The use of phosgene is subject to pre-approval by the Principal Investigator (PI) and/or the designated Laboratory Responsible Safety Person. DO NOT USE ANY PHOSGENE UNTIL YOU HAVE OBTAINED THE NECESSARY PRE-APPROVAL AND TRAINING.

Phosgene

Phosgene is a colorless, acutely toxic, corrosive gas with the formula $COCl_2$. It has a characteristic odor of freshly-cut grass or hay. Phosgene is used in organic chemical synthesis as either a gas or a solution in various solvents.

Phosgene can react with moisture in the mucus membranes to produce carbon dioxide and hydrochloric acid, and with proteins or DNA by cross-linking amine groups. Exposures can be fatal in small doses and can also cause destruction of exposed tissues.

Personal Protective Equipment & Personnel Monitoring

Lab Coat

Traditional white lab coat.

Gloves

Chloroprene or nitrile gloves when using phosgene gas. For phosgene solutions, ensure that your gloves provide protection against the solvent.

Eye Protection

Face Shield

ANSI Z87.1-compliant safety goggles, or face shield if a splash hazard is present.

Labeling & Storage

Large cylinders of phosgene must be stored in a toxic gas cabinet or other properly-exhausted enclosure. Small lecture bottles of phosgene and phosgene solutions may be securely stored in a chemical fume hood or glove box. Store solutions upright & tightly closed in a secondary container. Keep dry and at manufacturer's recommended temperature. Incompatible with strong oxidizing agents. For solutions, check for additional incompatibilities depending on the solvent.

Engineering Controls, Equipment & Materials

Glove Box	Whenever possible, phosgene should be handled inside of a glove box.
Fume Hood	If not handled in a glove box, phosgene and phosgene solutions must be used in a chemical fume hood. Contact EHSS to determine if ventilation is adequate and if additional exposure monitoring is needed.

Housekeeping

Releases	Immediately notify others in the area of the release and evacuate the location where the release occurred. Notify your PI/Responsible Safety Person and call Vanderbilt University Public Safety (VUPS) at 615-421-1911 (mobile) 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 EHS of the incident. Remain on-site at a safe distance to provide detailed information to first responders.
Decontamination	Rinse any equipment which may have come in contact with phosgene with water inside of a chemical fume hood, then wash with soap and water.
Waste	Please note that phosgene is considered 'extremely hazardous' when disposed as waste. If the vendor does not have a method to return/refill a cylinder, refer to the laboratory *Chemical Hygiene Plan* (Section 6.7) for information on proper chemical waste disposal procedures.

First Aid & Emergencies

If you believe that you may have been exposed to phosgene by any route, **SEEK MEDICAL ATTENTION IMMEDIATELY**. Immediately notify your PI / Responsible Safety Person and call 911 from any campus phone or 615-421-1911 (cell phone). The effects of phosgene poisoning may be delayed. Rescue of a person exposed to phosgene should only be attempted by trained personnel. **It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation.**

Name	Signature	Date