

Principal Investigator: \_\_\_\_\_

Date Approved: \_\_\_\_\_





This document covers basic chemical safety information for phosgene. The use of phosgene is subject to pre-approval by the Principal Investigator (PI) and/or Supervisor. PI and/or Supervisor may use the sheet attached to this SOP to document any lab specific training for Phosgene. **DO NOT USE PHOSGENE UNTIL YOU HAVE OBTAINED THE NECESSARY PRE-APPROVAL.**

## Phosgene

Phosgene is a colorless, acutely toxic, corrosive gas with the formula COCl<sub>2</sub>. 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. For more information on each individual hazard type, please refer to the respective 'single hazard' SOP.

Personal Protective Equipment & Personnel Monitoring			
 <b>Lab Coat</b>	 <b>Gloves</b>	 <b>Eye Protection</b>	 <b>Face Shield</b>
Traditional white lab coat.	Chloroprene or nitrile gloves when using phosgene gas. For phosgene solutions, ensure that your gloves provide protection against the solvent.	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. Primary containers should be labeled according to the UNC Charlotte Chemical Hygiene Plan. The secondary container's label must contain the chemical name and corresponding hazards. 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.

### **Ordering & Disposal**

As of July 1<sup>st</sup> 2022, Receiving & Stores will no longer coordinate the cylinder gas program for campus departments. Beginning on July 1, departments will enter requisitions for cylinder gases into [49er Mart](#) directly to the mandatory State Term Contract #1214A vendors, Airgas or ARC3 Gases, and deliveries/pickups will be made by the vendors directly to the department. Any order or service issues should be communicated directly to the vendor supplying the cylinder gas, or to the Purchasing Office who will assist the department with any issues encountered.

## **Housekeeping**

### **Spills**

In the event of a leaking phosgene cylinder or spilled phosgene solution, evacuate the lab immediately and call 911 from any campus phone (or 704-687-2200 from your cell phone).

### **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**

Refer to the UNC Charlotte Chemical Hygiene Plan for details.

## **First Aid & Emergencies**

If you believe that you may have been exposed to phosgene by any route, seek medical attention immediately. The effects of phosgene poisoning may be delayed. Rescue of a person exposed to phosgene should only be attempted by trained personnel equipped with self-contained breathing apparatus if the presence of phosgene fumes is suspected. Artificial respiration should only be attempted by trained medical personnel. **It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation.**

