Standard Operating Procedure

Chloromethyl methyl ether (CMME)

*This is an SOP template and is not complete until: 1) lab specific information is entered into the box below 2) lab specific protocol/procedure is added to the protocol/procedure section and
3) SOP has been signed and dated by the PI and relevant lab personnel.*

 Print a copy and insert into your
*Laboratory Safety Manual* and *Chemical Hygiene Plan*.
Refer to instructions for assistance.

|  |  |
| --- | --- |
| **Department:** | Click here to enter text. |
| **Date SOP was written:** | Click here to enter a date. |
| **Date SOP was approved by PI/lab supervisor:** | Click here to enter a date. |
| **Principal Investigator:** | Click here to enter text. |
| **Internal Lab Safety Coordinator/Lab Manager:** | Click here to enter text. |
| **Lab Phone:** | Click here to enter text. |
| **Office Phone:** | Click here to enter text. |
| **Emergency Contact:** | Click here to enter text. |
| *(Name and Phone Number)* |
| **Location(s) covered by this SOP:** | Click here to enter text. |
| *(Building/Room Number)* |

**Type of SOP:** ☐ Process ☒Hazardous Chemical ☐ Hazardous Class

**Purpose**

Chloromethyl methyl ether (CMME) is used as an [alkylating agent](http://en.wikipedia.org/wiki/Alkylating_agent) and industrial solvent to manufacture dodecylbenzyl chloride, water repellents, ion-exchange resins, polymers, and as a chloromethylation reagent. In organic synthesis, it is used for introducing the methoxymethyl (MOM) protecting group, and is thus often called MOM-Cl or MOM chloride.

**Physical & Chemical Properties/Definition of Chemical Group**

CAS# 107-30-2

Class: **OSHA Regulated Carcinogen**

 Carcinogen (IARC Group 1A)

Molecular formula: C2H5ClO

Form (Physical State): Clear liquid

Boiling Point: 55 - 57 °C (131 - 135 °F)

Flash point: 16 °C (61 °F)

**Potential Hazards/Toxicity**

Inhalation LC50: Mouse - 2 hr - 1,030 mg/m3

Signs and Symptoms of Exposure: Cough, shortness of breath, headache, nausea, and/or vomiting.

* *Inhalation:* Toxic if inhaled. Causes respiratory tract irritation.
* *Ingestion:* Toxic if swallowed.
* *Skin Contact:* May cause irritation with redness and pain. May be harmful if absorbed through skin.
* *Eye Contact:* May cause irritation, redness and pain.

**Personal Protective Equipment (PPE)**

* All persons shall wear personal protective equipment when handling CMME. This includes wearing a flame resistant lab coat, PVA or Silver Shield gloves, and closed toe shoes when working with CMME. Gloves should be changed frequently. Leave lab coats, gloves, and other personal protective equipment in the lab once your work is complete to prevent the spread of this or other chemicals outside of the lab.

**Engineering Controls**

* All operations involving CMME should be carried out in a certified chemical fume hood, glovebox, or a ducted Biosafety cabinet to keep airborne levels as low as feasible.
* Chemical fume hoods used as containment areas for particularly hazardous chemicals must have a face velocity of 100 feet/min, averaged over the face of the hood and must be certified annually.
* Laboratory rooms must be at negative pressure with respect to the corridors and external environment. The laboratory/room door must be kept closed at all times.

**First Aid Procedures**

* *Inhalation*: Remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.
* *Ingestion*: Do not induce vomiting. Rinse mouth with water. Never give anything by mouth to an unconscious person. Get medical attention immediately.
* *Skin Contact*: Immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Get medical attention immediately. Wash clothing before reuse. Thoroughly clean shoes before reuse. Contaminated work clothes should be laundered by individuals who have been informed of the hazards of exposure to this substance.
* *Eye Contact*: Immediately flush eyes with plenty of water for at least 15 minutes, lifting lower and upper eyelids occasionally. Get medical attention immediately.

**Special Handling and Storage Requirements**

* All work with CMME is to be done in the "CMME" designated area in order to keep contamination to a minimum. (*State the location of the designated area including the fume hood where work should be done and the storage location)*
* All chemicals containing CMME must be secondarily contained with proper signage. Containers of CMME and designated areas, including storage cabinets, must be labeled with a “CANCER HAZARD” warning. Any persons in this area are required to wear personal protective equipment. Safety shower and eye wash stations should be easily accessible where CMME is used.
* All laboratory equipment (such as beakers, pipettes, etc.) used in the "CMME" designated area are to be labeled as "CMME contaminated" and are not to be removed from the area without first being decontaminated.
* Store away from incompatible chemicals including oxidizers. Use explosion-proof equipment. Keep away from sources of ignition - No smoking. Take measures to prevent the buildup of electrostatic charge. Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage. Recommended storage temperature: 2 - 8 °C(refrigerators used for CMME storage must be explosion proof).

**Spill and Accident Procedure**

**Chemical Spill Dial 911**

**24-7 On-Call Response to Research, Environment, Health or Safety Concerns Dial 2-5561 from a campus phone or 706-542-5561 from a non-campus line.**

**Spill** – Follow the procedures set out in the [UGA Chemical and Laboratory Safety Manual.](http://research.uga.edu/docs/units/safety/manuals/Chemical-Laboratory-Safety-Manual.pdf)

[If there are any chemical-specific protocols for responding to a spill, insert them here or mark “none”:]

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# **Medical Emergency Dial 911**

**Life Threatening Emergency, After Hours, Weekends And Holidays** – Dial **911** or the emergency phone numbers listed at the beginning of the UGA Chemical and Laboratory Safety Manual

*Note: All incidents that result in an injury or property damage must be reported to ORS / ESD using a University Incident/Accident Report.*

**Non-Life Threatening Emergency** – Follow the instructions in the UGA Chemical and Laboratory Safety Manual.

*Note: All incidents that result in an injury or property damage must be reported to ORS / ESD using a University Incident/Accident Report.*

**Decontamination/Waste Disposal Procedure**

**For general hazardous waste disposal procedures, see Appendix H of the UGA Chemical and Laboratory Safety Manual.**

**Chemical Specific Procedures: [to be inserted or marked as “none”]**

Waste disposal procedures

1. All CMME contaminated waste shall be disposed of into waste containers specifically designated for CMME waste.
2. Waste containers must be labeled with “CANCER HAZARD” warning.
3. Once the waste container is full, dispose of as hazardous waste.

Decontamination of Equipment

Equipment that needs to be decontaminated (for repair or change of location etc.) must be washed with soapy water and rinsed with copious amounts of water.

**Safety Data Sheet (SDS) Location**

UGA personnel can access Online SDS through a link in the upper left corner of the ESD home page (<https://esd.uga.edu>) and logging in by using their UGA email user name and password.

**Protocol/Procedure**

*(Add specific description of procedure.)*

**Note:** Any deviation from this SOP requires written approval from PI.

**Documentation of Training** *(signature of all users is required)*

* Prior to conducting any work with CMME, designated personnel must provide training to his/her laboratory personnel specific to the hazards involved in working with this substance, work area decontamination, and emergency procedures.
* The Principal Investigator must provide his/her laboratory personnel with a copy of this SOP and access to the SDS provided by the manufacturer.
* The Principal Investigator must ensure that his/her laboratory personnel have attended appropriate laboratory safety training or refresher training within the last 12 months.

**Principal Investigator SOP Approval**

Print name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Signature\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Approval Date:

I have read and understand the content of this SOP:

|  |  |  |
| --- | --- | --- |
| **Name** | **Signature** | **Date** |
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