Standard Operating Procedure

**Chloroform**

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| **Department:** | Chemistry |
| **Date SOP was written:** | 7/21/2014 |
| **Date SOP was approved by PI/lab supervisor:** | 7/21/2014 |
| **Principal Investigator:** | Sarah Keller |
| **Location(s) covered by this SOP:** | *BAG 005* |
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**Type of SOP:** [ ]  Process [x] Hazardous Chemical [ ]  Hazardous Class

**Purpose**

Chloroform is a carcinogen. This SOP provides information about its hazards and how to mitigate them through proper controls, handling, and storage.Chloroform is commonly used in DNA purification procedures in biology and biochemistry and as a solvent in organic synthesis.

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

CAS#: 67-66-3

Class: **Select carcinogen**

Molecular Formula: CHCl3

Form (physical state): Liquid

Color: Colorless/Clear

Boiling point: 61-62 °C

**Potential Hazards/Toxicity**

Chloroform is a SELECT CARCINOGEN.

It is harmful if swallowed. Chloroform is irritating to eyes, respiratory system and skin. It poses danger of serious damage to health by prolonged exposure through inhalation and if swallowed.

Over pressurized containers of chloroform are potentially explosive.

**Personal Protective Equipment (PPE)**

**Respiratory Protection**

Respirators should be used only under any of the following circumstances:

* As a last line of defense (i.e., after engineering and administrative controls have been exhausted).
* When Permissible Exposure Limit (PEL) has exceeded or when there is a possibility that PEL will be exceeded.
* Regulations require the use of a respirator.
* An employer requires the use of a respirator.
* There is potential for harmful exposure due to an atmospheric contaminant (in the absence of PEL)
* As PPE in the event of a chemical spill clean-up process

Lab personnel intending to use/wear a respirator mask must be trained and fit-tested by EH&S. This is a regulatory requirement. (<http://map.ais.ucla.edu/go/1004655>)

**Hand Protection**

Viton, Polyvinyl alcohol, silvershield (or similar multilayer gloves) are recommended. Regular thickness latex and nitrile gloves do not provide sufficient protection from chloroform. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

NOTE: Consult with your preferred glove manufacturer to ensure that the gloves you plan on using are compatible with chloroform.

Refer to glove selection chart from the links below:

<http://www.ansellpro.com/download/Ansell_8thEditionChemicalResistanceGuide.pdf>

OR

<http://www.allsafetyproducts.biz/page/74172>

OR

<http://www.showabestglove.com/site/default.aspx>

OR

<http://www.mapaglove.com/>

**Eye Protection**

ANSI approved safety glasses.

**Skin and Body Protection**

Lab coats should be worn. These laboratory coats must be appropriately sized for the individual and be buttoned to their full length. Laboratory coat sleeves must be of a sufficient length to prevent skin exposure while wearing gloves. Personnel should also wear full length pants, or equivalent, and close-toed shoes. Full length pants and close-toed shoes must be worn at all times by all individuals that are occupying the laboratory area. The area of skin between the shoe and ankle should not be exposed.

**Hygiene Measures**

Avoid contact with skin, eyes and clothing. Wash hands before breaks and immediately after handling the product. .

**Engineering Controls**

Work with this chemical in a certified ducted fume hood. Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower.

 **First Aid Procedures**

**If inhaled**

If inhaled, remove to fresh air. If breathing becomes difficult, call a physician.

**In case of skin contact**

In case of contact, immediately wash skin with soap and copious amounts of water.

**In case of eye contact**

In case of contact with eyes, flush with copious amounts of water for at least 15 minutes. Assure adequate flushing by separating the eyelids with fingers. Call a physician.

**If swallowed**

If swallowed, wash out mouth with water provided person is conscious. Call a physician.

**Special Handling and Storage Requirements**

**Handling**: Do not breathe vapor. Do not get in eyes, on skin, on clothing. Avoid prolonged or repeated exposure.

**Storage:** Store in secondary containment with Select Carcinogen label on the primary container, secondary containment and the storage location. Keep containers tightly closed in a dry, cool, and well-ventilated place.

**Spill and Accident Procedure**

**Chemical Spill Dial 911 and x59797**

**Spill** – Assess the extent of danger. Help contaminated or injured persons. Evacuate the spill area. Avoid breathing vapors. If possible, confine the spill to a small area using a spill kit or absorbent material. Keep others from entering contaminated area (e.g., use caution tape, barriers, etc.).

**Small (<1 L)** – If you have training, you may assist in the clean-up effort. Use appropriate personal protective equipment and clean-up material for chemical spilled. Double bag spill waste in clear plastic bags, label and take to the next chemical waste pick-up.

**Large (>1 L)** – Dial **911** (or 310-825-1491 from cell phone) and EH&S at x59797 for assistance.

**Chemical Spill on Body or Clothes** – Remove clothing and rinse body thoroughly in emergency shower for at least 15 minutes. Seek medical attention. *Notify supervisor and EH&S at x59797 immediately.*

**Chemical Splash Into Eyes** – Immediately rinse eyeball and inner surface of eyelid with water from the emergency eyewash station for 15 minutes by forcibly holding the eye open. Seek medical attention. *Notify supervisor and EH&S at x59797 immediately.*

# **Medical Emergency Dial 911 or x52111**

**Life Threatening Emergency, After Hours, Weekends And Holidays** – Dial **911** *Note: All serious injuries must be reported to EH&S.*

**Needle stick/puncture** **exposure** (as applicable to chemical handling procedure) – Wash the affected area with antiseptic soap and warm water for 15 minutes. For mucous membrane exposure, flush the affected area for 15 minutes using an eyewash station. *Note: All needle stick/puncture exposures must be reported to EH&S.*

**Decontamination/Waste Disposal Procedure**

Clean contaminated surfaces with soap and water and paper towels. Dispose of the paper towels as hazardous waste. All spent chloroform is to be disposed as hazardous waste. Dispose of all plastic tubes and tips that have held chloroform as hazardous waste.

*General hazardous waste disposal guidelines:*

**Label Waste**

* Affix an on-line hazardous waste tag on all waste containers using the Online Tag Program <http://otp.ucop.edu/> as soon as the first drop of waste is added to the container

**Store Waste**

* Store hazardous waste in closed containers, in secondary containment and in a designated location
* Double-bag dry waste using transparent bags <http://map.ais.ucla.edu/go/1002774>
* Waste must be under the control of the person generating & disposing of it

**Dispose of Waste**

* Dispose of regularly generated chemical waste within 90 days
* Call EH&S at x61887 for questions
* Empty Containers
* Dispose as hazardous waste if it once held extremely hazardous waste (irrespective of the container size) <http://ehs.ucla.edu/Pub/ExtremelyHazardousWaste.pdf>
* Consult waste pick-up schedule <http://ehs.ucla.edu/pub/HazWaste%20Pickup%20Schedule.pdf>

Prepare for transport to pick-up location

* Check on-line waste tag
* Write date of pick-up on the waste tag
* Use secondary containment

**Safety Data Sheet (SDS) Location**

Online SDS can be accessed at [http://msds.ehs.ucla.edu](http://msds.ehs.ucla.edu/).

**NOTE**

Any deviation from this SOP requires approval from PI.

**Principal Investigator SOP Approval**

Print name Sarah Keller

Signature

Approval Date: 7/21/2014