Standard Operating Procedure

**Chloroform**

*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.

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| **Department:** | Chemistry & Biochemistry |
| **Date SOP was written:** | 1/15/2013 |
| **Date SOP was approved by PI/lab supervisor:** | 1/15/2013 |
| **Principal Investigator:** | Irene Chen |
| **Internal Lab Safety Coordinator/Lab Manager:** | Irene Chen |
| **Lab Phone:** | 805-893-8085 |
| **Office Phone:** | 805-893-8364 |
| **Emergency Contact:** | Irene Chen, 617-710-8741 (cell) |
| *(Name and Phone Number)* |
| **Location(s) covered by this SOP:** | *Chemistry 1142* |
| *(Building/Room Number)* |

**Type of SOP:**  Process 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 and RNA 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)**

**Hand Protection**

Polyvinyl alcohol, silvershield (or similar multilayer gloves) are recommended. **Regular thickness latex and nitrile gloves do not provide sufficient protection from chloroform.**

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. As outlined in UCLA Policy 905 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**

Wash thoroughly after handling. Wash hands before eating. Remove contaminated clothing and wash before reuse.

**Engineering Controls**

Certified ducted fume hood.

**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 container. Keep container tightly closed, and labeled “Danger: Select Carcinogen”. OK to store in flammable cabinet.

**Spill and Accident Procedure**

**Chemical Spill Dial 911 and 893-3194**

**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** and EH&S at **893-3194** 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* **893-3194** *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* **893-3194** *immediately.*

# **Medical Emergency Dial 9-911**

**Life Threatening Emergency:** Dial 9-**911** Contact PI and EH&S as soon as practical. *Note: All serious injuries must be reported to EH&S at x3194 within 8 hours.*

**Non-Life Threatening Emergency** – Go to Student Health, building 588, **x5361,** Hours: M, T, R, F 8 a.m. to 4:30 p.m, W 9 a.m. to 4:30 pm and R 5 to 7 p.m. by appointment. At all other times report to Goleta Valley Cottage Hospital (emergency room) at 351 South Patterson Avenue, **805-967-3411**. Contact PI and EH&S as soon as practical.*Note: All serious injuries must be reported to EH&S at x3194 within 8 hours.*

**Decontamination/Waste Disposal Procedure**

Wearing proper PPE, please decontaminate equipment and bench tops using water. Please dispose of the used material and disposables contaminated with this material as hazardous waste.

*General hazardous waste disposal guidelines:*

**Label Waste**

* Affix a hazardous waste tag on all waste containers 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
* 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 for questions and for pick-up
* Empty Containers: Dispose as hazardous waste irrespective of the container size

Prepare for transport to pick-up location

* Check waste tag
* Use secondary containment

**Safety Data Sheet (SDS) Location**

Online SDS can be accessed at <http://www.chem.ucsb.edu/about/safety> .

**Protocol/Procedure**

Chloroform is commonly used for extraction of nucleic acids, often in conjunction with phenol. Its density is greater than water, so the chloroform layer forms below the aqueous layer. Always use a fume hood when using chloroform with the possibility of formation of vapor, to protect yourself and others. Chloroform can be used in closed containers (e.g., capped eppendorf tubes) outside the fume hood, but open containers in the fume hood only. Avoid contact: regular latex and nitrile gloves will NOT protect from chloroform.

**NOTE**

Any deviation from this SOP requires approval from PI.

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

* Prior to conducting any work with chloroform, 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 a copy of 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 one year.

I have read and understand the content of this SOP:

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