

Standard Operating Procedure

Chloroform

This SOP is not complete until it 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:	Chemistry & Biochemistry – Chemical Engineering
Date SOP was written:	December 14, 2012
Date SOP was approved by PI/lab supervisor:	January 18, 2013
Principal Investigator:	Prof. Susannah Scott
Internal Lab Safety Coordinator/Lab Manager:	Stephanie Goubert-Renaudin
Lab Phone:	805-893-8941
Office Phone:	805-893-7403
Emergency Contact:	EH&S 24 hour line: 805-893-3194 (Name and Phone Number)
Location(s) covered by this SOP:	ESB 3324 and 3328 (Building/Room Number)

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

Purpose

Chloroform is commonly used as a solvent in research laboratories because it is relatively unreactive, miscible with most organic liquids, and conveniently volatile. Chloroform is a select carcinogen. If not stored and handled properly, this can pose a serious threat to the health and safety of laboratory personnel, emergency responders and chemical waste handlers. Hence, it is important to follow safety protocols to handle this chemical.

Physical & Chemical Properties/Definition of Chemical Group

CAS# 67-66-3
Colorless, clear liquid
Boiling point 61-62 °C
Formula CHCl₃

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)

Wear nitrile gloves, lab coat, and safety glasses.

Engineering Controls

Ventilated Fume hood, glove box.

First Aid Procedures

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

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

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

EYE EXPOSURE: 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.

INFORMATION FOR PHYSICIAN: Contamination of the eyes should be treated by immediate and prolonged irrigation with copious amounts of water.

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: Keep container tightly closed.

Spill and Accident Procedure

Chemical Spill Dial **9-911** and EH&S (805-893-3194)

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 **9-911** from campus phones (**and 805-893-3446 from a cell phone**) and EH&S (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 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 immediately.*

Medical Emergency Dial **9-911**

Life Threatening Emergency, After Hours, Weekends and Holidays – Dial **9-911** (or 805-893-3446 from a cell phone) or go to the Emergency Room of Goleta Valley Cottage Hospital at 351 South Patterson Avenue, Goleta (Phone number: 805-967-3411) *Note: All Serious injuries must be reported to EH&S within 8 hours.*

Non-Life Threatening Emergency – Go to the Student Health Building, Building 588 (phone number: 893-5361, hours: M, T, R, F 8am-4.30pm, W 9am - 4.30pm, R 5pm to 7pm by appointment). After hours go to the Emergency Room of Goleta Valley Cottage Hospital at 351 South Patterson Avenue, Goleta (Phone number: 805-967-3411) *Note: All serious injuries must be reported to EH&S within 8 hours.*

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. Page the needle stick nurse \ and then enter your extension. After hours go to the nearest emergency room: the Emergency Room of Goleta Valley Cottage Hospital at 351 South Patterson Avenue, Goleta (Phone number: 805-967-3411). *Note: All needle stick/puncture exposures must be reported to EH&S within 8 hours.*

Decontamination/Waste Disposal Procedure

Clean contaminated surfaces with paper towels. All spent chloroform is to be disposed as hazardous waste in the appropriate organic container within the fume hood.

General hazardous waste disposal guidelines:

Label Waste

- Affix an hazardous waste tag on all waste 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

Dispose of Waste

- Dispose of regularly generated chemical waste within 90 days
- Call EH&S for questions (**893-3194**)
- Empty Containers
 - Rinse off the empty containers with a low boiling point solvent, dry and dispose capped in the glassware container

Material Safety Data Sheet (MSDS) Location

Online SDS can be accessed at

<http://ehs.ucsb.edu/units/labsfty/labrsc/chemistry/lschemmsdsacc.htm>

Protocol/Procedure

In the laboratory, chloroform is used as a solvent.

Chloroform containers are stored in a ventilated cabinet and are kept sealed when not in use.

Due to its toxicity, when handling chloroform, PPE is required at all time, including nitrile gloves, safety goggles and a lab coat. Gloves are changed as soon as they are contaminated.

Due to its volatility, when not used in a glove box, chloroform has to be handled in a ventilated fume hood including measuring and transferring to the reaction vessel. Chloroform containers have to be cap-sealed/closed all the times when not within the fume hood, including transferring the reaction vessel to the rotary evaporator.

Chloroform has to be disposed as hazardous waste in the appropriate container, which has to be kept closed.

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, i.e. approved users listed below, must provide training to 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 as required by EH&S.

I have read and understand the content of this SOP:

Name	Signature	Trainer	Date
Prof. Susannah Scott			
Stephanie Goubert-Renaudin			
Gary Kwanyu Ng			
Alessandro Gallo			
Anthony Crisci			
Haibo Yu			
Taeho Hwang			
Bethany Wigington			
Daniel Coller			

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