




**LABORATORY SAFETY GUIDELINE****Chloroform** [CAS No. 67-66-3]

All chloroform users at Harvard must review this document prior to using this substance. Chloroform is a clear liquid with a heavy, sweet odor and a high vapor pressure (25.9 kPa at 25 °C).

HAZARDS

	Chloroform is toxic if swallowed or inhaled. It can cause severe and irreversible health effects, including death.
	Short-term exposure to high levels of chloroform can damage the central nervous system, liver, and kidneys. Long-term exposure to lower levels of chloroform can damage the liver and kidneys. If a pregnant woman is exposed to chloroform, she may be at a greater risk of miscarriage and her baby may have a greater risk of being born with birth defects. Chloroform is a possible human carcinogen.
	Skin exposure to large amounts of chloroform can cause sores. Skin exposure to lesser amounts of chloroform can cause irritation. Chloroform can irritate eyes that encounter it.

PRECAUTIONS**Before starting work:**

- Determine if you can use a less hazardous substance in place of chloroform;
- Review the manufacturer's Safety Data Sheet and additional chemical information at <http://www.ehs.harvard.edu/safety-data-sheets-sds>;
- Ensure that a written experimental protocol including safety information is available;
- Be familiar with general University emergency procedures in the [EHS Lab Emergency Response Guide](#);
- Order the most dilute solutions available that will meet experimental needs. Order only the quantity that you need;
- Identify the location of the nearest eyewash and shower and verify that they are accessible;
- Locate and verify that appropriate chloroform spill cleanup materials are available, including the following:
 - polypropylene absorbent pads or equivalent (example paper towels); and
 - polypropylene containers that can hold the pads and be sealed tightly;
- Do not work alone! Ensure another person who is familiar with your work and chloroform hazards is in the area.

During work:

- **AVOID INHALATION!** Perform all operations in a certified chemical fume hood or other approved ventilated enclosure;
- **AVOID CONTACT!** Use appropriate personal protective equipment (PPE):
 - Wear a lab coat, long pants, shirt and closed-toed shoes.
 - If you anticipate more than splash contact with chloroform, use 12-mil thick Viton over Butyl gloves. If you anticipate only splash contact with chloroform, use either 15-mil thick nitrile gloves or double-gloved standard 4-mil thick nitrile gloves.
 - Gloves must be thoroughly inspected prior to each use. Do not use damaged gloves;
 - Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with chloroform;
 - Change gloves (outer and inner) at least once an hour and immediately whenever you suspect chloroform has contacted your gloves;
 - Wear chemically-protective goggles (in lieu of goggles, work behind a mostly closed fume hood sash while wearing safety glasses); and

- Wash hands and forearms thoroughly with soap and water each time gloves are removed.
- Use materials and containers appropriate for chloroform use and remain aware of potential incompatibilities. Chloroform penetrates most plastics with the exception of FEP (fluorinated ethylene propylene). Therefore, both FEP and glass containers/materials work well. Keep in mind, however, that glass is fragile – overpack glass containers in plastic containers.
- Keep all containers tightly closed when not in use and during transport.

After completing the work:

- Dispose of waste chloroform following Harvard University [Hazardous Waste Procedures](#).
 - Hazardous Waste Classification: Toxic
- Return container to storage area following Harvard University [Laboratory Chemical Storage Guide](#)
 - Storage Group GS [General Storage]
 - Store in designated plastic (polyethylene) secondary container.
 - Store in original containers or other appropriate containers.
- Wash hands and forearms thoroughly with soap and water before leaving the lab.

EMERGENCY PROCEDURES

First Aid

SKIN CONTACT

- Flush skin with water for 15 minutes using the closest available sink, portable drench hose or safety shower. Remove any exposed clothing as well as any jewelry that may be trapping chloroform;
- Call 911 on a landline phone for medical assistance (or provide location if calling on a mobile phone).

EYE CONTACT

- Using eyewash, flush eyes while holding eyelids open for 15 minutes;
- Call 911 for medical assistance;
- Continue flushing eyes with water until emergency medical personnel arrive.

INHALATION

- If chloroform mist or vapors are inhaled, immediately move to get fresh air;
- Call 911 for medical assistance.

INGESTION

- Do not induce vomiting;
- Call 911 for medical assistance;
- Rinse mouth with water if conscious;
- Never give anything by mouth to an unconscious person.

Spill Response

OUTSIDE FUME HOOD OR VENTILATED ENCLOSURE

- Alert others and evacuate to a safe distance and prevent entry.
- Contact the University Operations Center at (617) 495-5560 [HMS/HSDM (617) 432-1901]
- Remain in a safe location until EHS or other response personnel arrive.

INSIDE FUME HOOD OR VENTILATED ENCLOSURE (< 500 ml)

- Contact the University Operations Center at (617) 495-5560 [HMS/HSDM (617) 432-1901]
- If trained and confident, apply polypropylene absorbent pads or any type of absorbent material. During clean-up, ensure you are wearing PPE described above including goggles.
- Otherwise close the fume hood sash and await support.