LABORATORY SAFETY GUIDELINE

Formaldehyde 37% (methylene oxide methyl aldehyde, methanal) [CAS No. 50-00-0]

The following information is for formaldehyde solutions at a 37% concentration. Formalin, which is diluted formaldehyde, and Paraformaldehyde, which is solid polymerized formaldehyde, do not exhibit all of these characteristics.

HAZARDS

	Many solutions of 37% formaldehyde also contain up to 15% methanol which can potentially make the solution flammable.
	•Carcinogen (known human carcinogen) •Sensitizer (skin and pulmonary) •Irritant (skin, eye, and respiratory tract) •Reproductive toxin •Acutely toxic (by skin contact and inhalation)
	37% Formaldehyde is corrosive to metal.

PRECAUTIONS

Storage:

- Formaldehyde at 37% reacts violently with strong oxidizers, hydrogen peroxide, potassium permanganate, acrylonitrile, caustics, magnesium carbonate, nitromethane, nitrogen oxides, and peroxyformic acid. Therefore it should be stored in a manner that would prevent the possible comingling with these compounds.
- Formaldehyde at 37% is incompatible with strong acids, amines, ammonia, aniline, bisulfides, gelatin, iodine, magnesite, phenol, tannins, and copper, iron, and silver salts. Therefor it should be stored in a manner that would prevent the possible comingling with these compounds.
- Formaldehyde can be safely stored with organic acids.

Before starting work:

- Review manufacturer's Safety Data Sheet and additional chemical information at http://www.ehs.harvard.edu/safety-data-sheets-sds.
- Make sure you are familiar with general University emergency procedures in the EHS Lab Emergency Response Guide.
- Identify the location of the nearest eyewash and shower and verify that they are accessible.
- All operations involving large quantities of formaldehyde should be conducted using an exposure control device such as a chemical fume hood.
- For routine use outside of a chemical fume hood, an assessment must first be conducted by the EHS Department to determine the exposure level.

During work:

- AVOID INHALATION! Perform all operations in a certified chemical fume hood or other approved ventilated area.
- AVOID CONTACT! Wear appropriate personal protective equipment (PPE) including:
  - Lab coat and closed toed shoes.
  - Safety glasses or goggles.
  - Wear appropriate chemically protective gloves. Nitrile provides decent protection from splashes. Butyl gloves provide the best protection.

- Wash hands thoroughly each time gloves are removed.
- Keep all containers tightly closed when not in use.

After completing your work

- Dispose of formaldehyde waste following Harvard University Hazardous Waste Procedures.
  - Hazardous Waste Classification: Corrosive. This designation is if your waste stream has a low pH. The lower the concentration of formaldehyde, the higher the pH (assuming no other acids have been introduced into the stream). When in doubt it is best to manage the stream has corrosive waste.
- Return stock container to storage area.
- Wash hands before leaving lab.

EMERGENCY PROCEDURES

First Aid

SKIN CONTACT
- Immediately remove all contaminated clothing, including footwear.
- Flush skin and/or hair with running water for at least 15 minutes.
- Seek medical attention if exposure is significant.

EYE CONTACT
- Using eyewash, flush eyes while hold eyelid open and away from exposed eye for at least 15 minutes.
- Seek medical attention without delay.
- Removal of contact lenses after an eye injury should only be undertaken by skilled personnel.

INHALATION
- If fumes or aerosols are inhaled leave the area.
- Monitor for respiratory distress.

INGESTION
- **Do not induce vomiting.**
- Call 911.
- Give water to rinse out mouth, then provide water slowly and as much as one can comfortably drink.

Spill Response

It is critical that you are familiar with Harvard's Emergency Response Guide for Laboratories. You can review the guide by clicking on this link.

OUTSIDE FUME HOOD OR VENTILATED ENCLOSURE
- Alert people in the immediate area to evacuate to a safe distance.
- Call 911 if there is a medical emergency and/or fire.
- Attend to injured or contaminated person and remove from exposure, if it is safe to do so.
- Increase exhaust to outside, if possible, by contacting building operations. If the spill is in a laboratory fume hood fully open the sash of a fume hood if safe to do so.
- If the lab feels comfortable cleaning up the spill proceed per Harvard's lab ERG, otherwise call operations for assistance at 617) 49**5-5560** [HMS/HSDM (617) 43**2-1901].**

INSIDE FUME HOOD OR VENTILATED ENCLOSURE (< 500 ml)
- Get a chemical spill kit and put on appropriate personal protective equipment including splash goggles, chemical resistant gloves, and a long-sleeved lab coat.
- Use an acid neutralizer on any free liquid.
- If there is broken glass with spilled liquid, use tweezers to collect the glass.
- Collect debris in an appropriate container, tightly seal or close container, attach a Hazardous Waste Tag, and move the waste to your Satellite Accumulation Area.
- Fill out an online waste pickup request at the EHS website.