

**STANDARD OPERATING PROCEDURE:
FORMALDEHYDE – CAS No. 50-00-0**

PI: _____	Room & Building: _____
Department: _____	Research Group: _____
Date: _____	Pertains to Lab Protocol: _____

USE & PROCEDURE

Attach the experimental protocol(s) that involve the use of formaldehyde.

POTENTIAL HAZARDS

- Carcinogen (IARC Group 2A – probable human carcinogen)
- Sensitizer (skin and pulmonary)
- Irritant (skin, eye, and respiratory tract)
- Reproductive toxin
- Acutely toxic (by skin contact and inhalation)
- Corrosive
- Flammable (Formalin, >37% ± Methanol, 7-15%)
- Combustible (Formalin, 20-25%)
- Noncombustible (Formalin, 10%)

ENGINEERING/VENTILATION CONTROLS

- All operations involving formaldehyde stock solutions and dilutions should be carried out in 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.
 - Levels must be below the OSHA 8-hour permissible exposure limit (PEL): 0.75 ppm
 - Odor threshold: 0.5-1.0 ppm (therefore, if you can smell it you may be above the PEL)

RECOMMENDED PERSONAL PROTECTIVE EQUIPMENT

The level of skin and eye protection should be selected based on the potential for splashing and other forms of exposure.

Minimum potential for splash & exposure:

- ✓ Chemical splash goggles
- ✓ Single pair of nitrile, neoprene, PVC (vinyl), butyl, or Viton™ gloves
 - Immediately replace with new gloves when splash occurs.
- ✓ Protective clothing (e.g. non-porous lab coat, impervious sleeves; closed-toed impervious shoes)

RECOMMENDED PERSONAL PROTECTIVE EQUIPMENT *(continued)*

When using or transferring large quantities:

- ✓ Chemical splash goggles
- ✓ Face shield (if not working in a fume hood or if hood's sash is not in the down position)
- ✓ Double nitrile, neoprene, PVC (vinyl), butyl, or Viton™ gloves
 - Immediately replace with new gloves when splash occurs.
- ✓ Chemical resistant apron/smock/lab coat (PE or PVC)
 - Avoid using the traditional cotton-polyester white lab coat, which readily collects/absorbs compounds.
- ✓ Protective clothing (e.g. non-porous sleeves, closed-toed impervious footwear)

ADDITIONAL PRECAUTIONS AND STORAGE REQUIREMENTS

- Reacts violently with nitrogen dioxide, perchloric acid/aniline mixtures and nitromethane.
- Reacts with HCl to form the potent carcinogen, bis-chloromethyl ether.
- Keep away from heat, sparks, and flame.
- Keep separate from oxidizing agents, alkalis, inorganic acid, ammonia, phenol, isocyanates, peracids (non-chlorine bleaching agents such as H₂O₂), anhydrides.
- Store containers of formaldehyde in secondary containers in areas separate from the incompatibles.

MATERIAL SAFETY DATA SHEETS

MSDSs are available electronically via EHS Department's Web page:

<http://www.uos.harvard.edu/ehs/msds/>. An option, but consider collecting in a binder the MSDSs that arrive with each order.

WASTE

Refer to the *Harvard Longwood Laboratory Waste Guide* at

<http://www.uos.harvard.edu/ehs/longwood/HarvardLongwoodLabWasteGuide.pdf>

• Disposal of non-hazardous chemical waste

EMERGENCY PROCEDURES

Refer to the emergency flip chart titled "*EHS Procedures and Response Guidelines*," posted in each laboratory and found on EHS's webpage at <http://www.uos.harvard.edu/ehs/longwood/>

Chemical Spill:

- For small spills, 25 ml/25 g or less, follow chemical spill response guidelines above. Don protective clothing, extinguish all ignition sources, and carefully apply vermiculite or other appropriate spill absorbent material to the spill. Place in appropriate containers for disposal.
- For a large spill, vacate the lab, deny further entry, and call EHS for assistance.

Fire:

- Toxic vapors, including irritating gaseous formaldehyde, may be given off in a fire. In the event of fire, evacuate and bar further entry.