

## Tel-Aviv University – Safety Unit

Standard Operating Procedures for <b>Formaldehyde</b> or Processes	
1. Chemicals	<p>Formaldehyde and Formalin, commonly used as fixatives and as nucleic acid denaturants and tissue preservation, as well as in cold sterilization. Both formalin and paraformaldehyde solutions can emit formaldehyde gas.</p> <p>Acute exposure to formaldehyde may result in pulmonary edema (fluid in the lungs), central nervous system (CNS) depression, or pneumonitis (inflammation of the lung tissue). Chronic exposure may cause irritation of the skin, mucous membranes or respiratory tract. Repeated exposure to formaldehyde may result in an allergic response. It is also a potential carcinogen. Primary exposure routes are inhalation and skin absorption.</p> <p>Formaldehyde is a Flammable liquid, irritant, sensitizer and potential human carcinogen.</p> <p>Permissible exposure limit (PEL) (8hrs.): 0.75 ppm, short term exposure limit (STEL) (15 min.) 2 ppm, action level (8hrs.): 0.5 ppm.</p>
2. Personal Protective Equipment (PPE)	<p>Chemical splash goggles and double pair of chemical resistant gloves must be worn to prevent eye contact and limit dermal exposure.</p> <p>Change gloves frequently and immediately replace with new gloves when gloves become contaminated.</p> <p>A lab coat is also required.</p> <p><b>NOTE:</b> Latex gloves are not recommended.</p>
3. Environmental / Ventilation Controls	<p>All operations involving formaldehyde and dilutions should be carried out in a certified chemical fume hood or a ducted Biosafety cabinet to keep airborne level below recommended exposure limits.</p> <p>Routine use outside of a fume hood is acceptable only when formaldehyde levels are monitored and are below 0.5 ppm.</p> <p>Vacuum lines are to be protected by HEPA (high efficiency particulate air) filters.</p>
4. Special Handling Procedures & Storage Requirements	<p>Work with concentrated (&gt;4% formaldehyde/paraformaldehyde) solutions only in a chemical fume hood.</p> <p>Handle paraformaldehyde powder (and, preferably, granules or flakes) only in a chemical fume hood.</p> <p>Dilute solutions (&lt;4% <b>formaldehyde</b>) may be used on the benchtop in small quantities, as long as the process has been monitored and formaldehyde levels are determined to be at acceptable safe levels.</p> <p><b>**Any work conducted outside of a fume hood must be approved by the PI and the PI must contact the safety unit, and request air monitoring for formaldehyde. Air monitoring must be conducted prior to using outside a fume hood.</b></p>

	<p>Store in a cool dry well ventilated flammable liquid storage area or cabinet. <b>Do not store</b> with strong oxidizing or reducing agents, strong acids or bases, alkalies, alkali metals, amines, ammonia or phenol.</p> <ul style="list-style-type: none"> <li>• Transport formaldehyde solutions in secondary containment, preferably a polyethylene or other non-reactive acid/solvent bottle carrier</li> </ul>
5. Spill and Accident Procedures	<p>If skin is exposed, wash immediately with soap and water. Flush mucus membranes with large amounts of water. Use drench shower in case of extensive contamination.</p> <p>Report incident to supervisor. Supervisor reports the accident/injury to the Biosafety Unit.</p> <p>Remove all sources of ignition from the spill area.</p> <p><b>Spills in fume hood</b> - use absorbent pads or vermiculite to clean up small fume hood spills. Clean up spill area with additional pads or paper towels followed by clean water.</p> <p><b>Spills in room</b> – Notify others of the spill and keep spill area confined.</p> <p>Spills must be cleaned immediately by properly protected and trained staff. Respiratory protection is required to clean up spills of formaldehyde outside an operating fume hood, as well as disposable lab coat, goggles, and two pairs of nitrile gloves.</p> <p>Use the same procedure as with "Spills in fume hood".</p> <p>Place spill waste in plastic bag, label as hazardous chemical waste.</p> <p>Call the safety unit (7555) for assistance. If it is an emergency (risk of fire or exposure to others) call 5676.</p> <p>After cleanup, room air must be monitored by safety unit, prior to occupancy.</p>
6. Waste Disposal	<p>If disposing of as hazardous waste, label with Hazardous Waste Label, accumulate according to requirements, and send in Chemical Collection Request or Routine Pickup request.</p>
7. <b>Special Precautions for Animal Use/sampels (if applicable)</b>	<p><u>Disposal of sample tissues or material soaked in formaldehyde :</u></p> <p><b>For animal samples stored in formaldehyde:</b> separate and filter the sample from the solution in a fume hood.</p> <p>Dispose the solution as a chemical waste and the sample in the regular trash (after the solution has evaporated).</p>
8. Approval Required	<p>The Principal Investigator (PI) must provide lab specific training to all laboratory workers specific to the hazards (physical and health) involved in working with the substance, work area decontamination and emergency procedures. In addition, the PI must review and provide a copy of the MSDS and this SOP to any lab worker prior to working with any of the materials covered by this SOP.</p> <p>The PI must ensure that all lab personnel have attended the required training and/or refresher training.</p>
9. Decontamination	<p>Wash affected area with soap and water.</p>

I hereby confirm that I have read the SOP (Standard Operating Procedure) for Working with Formaldehyde in Animals, and agree to follow these procedures.

Name:

Title:

Signature:

Date:

**Dr. Esther Michael - Biological Safety Office, : 640-9966**

**Safety Unit 7555**