Formaldehyde Fact Sheet for UMass Medical Students

Formaldehyde is a corrosive, colorless, strong-smelling gas. Cornell Special Anatomical Solution is the current embalming fluid. It is a mixture that contains: Formaldehyde 7.5%; Phenol 12.5%; Reagent Alcohol 62.5%; and Glycerin 17.5% (see attached Material Safety Data Sheet {MSDS}).

Health Hazard Information

Acute Effects of Exposure:
Formaldehyde is both an irritant and a sensitizing agent. It can cause an irritant or, less often, an allergic reaction that might result in a contact skin rash, or rarely breathing difficulty, including asthma. Acute high-dose contact exposure to the liquid can be highly irritating to skin and eyes. Acute high-dose inhalation exposure is strongly irritating to the nose and throat, and can cause an irritant laryngitis or cough, or allergic asthma (wheezing). Neurological symptoms can be experienced, such as headache and changes in mental status similar to alcohol intoxication. Ingestion of formaldehyde can cause irritation of the gastrointestinal tract, and can be fatal. Persons who become sensitized (allergic) to formaldehyde can have airway or asthma reactions as a result of low-dose exposure. Airborne concentrations of 100 ppm are immediately dangerous to health or life.

Chronic Effects of Exposure:
Formaldehyde is considered a cause of nose and throat cancer in humans who are chronically exposed to formaldehyde for many years. Prolonged or repeated overexposure may also result in respiratory impairment.

Pregnancy:
Formaldehyde has not been demonstrated to affect pregnancy outcomes. However, pregnant women who are at risk of exposure to any chemical at work or at school should seek medical advice and take appropriate precautions to minimize significant exposure.

Exposure Standards

The OSHA formaldehyde permissible exposure limit (PEL) is 0.75 ppm (parts per million parts of air) as an 8-hour time-weighted average (TWA). The short-term exposure limit (STEL) for formaldehyde is 2 ppm (maximum exposure allowed during a 15-minute period of time). The action level—which is the threshold for increased industrial hygiene monitoring and initiation of employee medical surveillance, is 0.5 ppm when calculated as an 8-hour TWA.

Exposure Monitoring

All students exposed or potentially exposed to formaldehyde will be identified, and exposure risk will be assessed via air sampling on an annual basis by the Environmental, Health and Safety Department. The results of these exposure risk assessments will be communicated to all potentially exposed individuals. If applicable, medical surveillance will be provided in accordance with prescribed OSHA requirements.

Over the past several years, all air sampling results for formaldehyde were found to be below the OSHA permissible exposure level, the action level and the short-term exposure limit. Monitoring will...
continue on an annual basis. Sampling may also be conducted in the event of suspected overexposure or new onset asthma or allergy thought possibly to be associated with formaldehyde exposure.

Safe Work Practices

Gloves, aprons, and protective eyewear must be used when coming into contact with formaldehyde solutions. Gloves made of nitrile, neoprene, butyl rubber, polyvinyl chloride (PVC), or polyethylene laminate should be worn -- not gloves made of latex which may not provide adequate protection and which can cause allergic sensitization skin rash or rarely asthma reactions in some susceptible persons.

Spills and Clean Up

Small spills or drips on work surfaces may be safely cleaned up with commercially-available formaldehyde neutralization products, in the form of absorbent pads or sheets. Immediately after cleanup, remove all contaminated materials from the work area. Report the spill and cleanup to Environmental, Health and Safety. For large formaldehyde spills, evacuate the area and call 63292.

First Aid Procedures

Ingestion:
If the victim is conscious, dilute, inactivate, or absorb by giving milk, activated charcoal or water. Any organic material will inactivate formaldehyde. Keep the person warm and at rest. Get medical attention immediately. If vomiting occurs, keep head lower than hips.

Inhalation:
In the event of a significant exposure, remove victim to fresh air immediately. If breathing has stopped, give artificial respiration. Keep warm and at rest. Get immediate medical attention.

Skin contact:
Wash the affected area with soap and a large amount of water for at least 15-20 minutes. If there are chemical burns or if irritations persist have the individual seek medical attention.

Eye contact:
Wash the eyes immediately with large amounts of water for at least 15-20 minutes. Get medical attention immediately.

Medical Care

For non emergent or general questions regarding formaldehyde exposure such as allergy or other health concerns about working with formaldehyde, Student Health Services should be contacted. For any symptoms related to exposure to formaldehyde by skin or eye contact, inhalation, or ingestion, contact Employee Health Services for the initial evaluation and then Student Health Services will do any follow-up required. Call 911 for transport immediately to the Emergency Department at the hospital if serious symptoms occur as a result of exposure to formaldehyde such as an acute generalized allergic or asthmatic reaction. If Emergency Department services are sought, follow-up should be scheduled the same or next business day at Student Health Services.
The Student Health Services is located on the first floor of the Benedict building. The telephone number is 508-334-8464.

The Employee Health Services clinic satellite site is located at the University, B Level, Room HB-376. The telephone number is 774-441-6263.

The Employee Health Services (by appointment) is located at 210 Lincoln Street, Worcester, MA. The telephone number is 508-793-6400.

**Additional Information**

The following web sites have information on formaldehyde.

http://www.osha.gov/SLTC/formaldehyde/standards.html


http://www.osha.gov/OshDoc/data_General_Facts/formaldehyde-factsheet.pdf. If there are any questions or concerns, please feel free to contact the Environmental Health & Safety office at 508-856-3985.
### Material Safety Data Sheet

**SECTION 1**

**Manufacturer's Name:** Hydroly Chemical Company  
**Address:** 520 Commerce Drive, Yeaton, PA 19050  
**Emergency Telephone No.:** (800) 345-8200  
**Chemical Name:** Formaldehyde  
**CAS Registry No.:** 672-68-5

**SECTION 2 - HAZARDOUS INGREDIENTS/IDENTITY**

<table>
<thead>
<tr>
<th>Hazardous Component(s)</th>
<th>Chemical &amp; Common name(s)</th>
<th>CAS No.</th>
<th>PEL</th>
<th>TLV</th>
<th>%</th>
<th>Exposure Limits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Formaldehyde 37%</td>
<td></td>
<td>50-00-0</td>
<td></td>
<td></td>
<td>7.5</td>
<td>&lt;0.25 ppm</td>
</tr>
<tr>
<td>Phenol</td>
<td></td>
<td>105-99-2</td>
<td></td>
<td></td>
<td>12.5</td>
<td>5-10 ppm</td>
</tr>
<tr>
<td>Ethanol</td>
<td></td>
<td>64-17-5</td>
<td></td>
<td></td>
<td>62.5</td>
<td>5-10 ppm</td>
</tr>
<tr>
<td>Glycerine</td>
<td>Not Established</td>
<td>56-81-5</td>
<td></td>
<td></td>
<td>17.5</td>
<td></td>
</tr>
</tbody>
</table>

**SECTION 3 - PHYSICAL & CHEMICAL CHARACTERISTICS**

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Boiling Point</td>
<td>160°F</td>
</tr>
<tr>
<td>Specific Gravity</td>
<td>0.93</td>
</tr>
<tr>
<td>Flash Point</td>
<td>80°F</td>
</tr>
<tr>
<td>Solubility in Water</td>
<td>Complete</td>
</tr>
<tr>
<td>Appearance</td>
<td>Light-Yellow, Pungent Odor</td>
</tr>
</tbody>
</table>

**SECTION 4 - FIRE & EXPLOSION DATA**

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flash Point</td>
<td>N/A</td>
</tr>
<tr>
<td>Auto-Ignition</td>
<td>Unknown</td>
</tr>
<tr>
<td>Special Fire Fighting Procedures</td>
<td>Wear SCBA and complete protective clothing</td>
</tr>
<tr>
<td>Unusual Fire and Explosion Hazards</td>
<td>Vapors heavier than air and can travel to source of ignition causing flash back</td>
</tr>
</tbody>
</table>

**SECTION 5 - PHYSICAL HAZARDS (REACTIVITY DATA)**

<table>
<thead>
<tr>
<th>Stability</th>
<th>Unstable</th>
<th>Conditions</th>
<th>Strong Alkali, high temperatures &amp; temperatures below 68°F.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Incompatibility</td>
<td>(Materials to Avoid)</td>
<td>Strong oxidizers, alkalis, acids, isocyanates, anhydrides, iodides.</td>
<td></td>
</tr>
<tr>
<td>Hazards from Decomposition Products</td>
<td>Carbon Monoxide and Dioxide, Formaldehyde Gas.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hazardous Polymers</td>
<td>May Occur</td>
<td>Conditions</td>
<td>None.</td>
</tr>
</tbody>
</table>

**SECTION 6 - HEALTH HAZARDS**

**Acute:** Inflammation of mucous membranes, dermatitis, bronchial pneumonia.  
**Chronic:** Formaldehyde possible carcinogen, dermatitis, bronchial pneumonia

**Signs and Symptoms:** Inflammation of eyes, skin, nasal passages, bronchial pneumonia

**Medical Conditions Generally Aggravated by Exposure:** Unknown

**Chemical Listed as Carcinogen or Potential Carcinogen:** Formaldehyde

**Emergency and First Aid Procedures**

1. **Inhalation:** Remove from contaminated area. Restore breathing.  
   Seek immediate medical aid.
2. **Eyes:** Wash 15 minutes. Seek immediate medical aid.
3. **Skin:** Wash with H2O. Remove contaminated clothing. Wash before reuse.
4. **Ingestion:** Give 2 glasses of water. Induce vomiting. Seek immediate medical aid.

**Routes of Entry:** Inhalation,眼睛, skin, ingestion

**Special Protection Information/Control Measures**

1. **Respiratory Protection:** NIOSH Formaldehyde or SCBA.
2. **Ventilation:** Local Exhaust to maintain below TLV.
3. **Protective Goggles:** Chemical Safety Goggles.
4. **Other Protective Equipment:** Rubber or Neoprene Apron and Boots, Eye Wash Station, Safety Shower.

**DOT Shipping Name:** UN 3389  
**DOT Hazard Class:** 3.1  
**UN Number:** 3389  
**Packing Group:** II  
**Flammability:** 3

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