

EHS Registration #: \_\_\_\_\_

Expiration Date: \_\_\_\_\_

**STANDARD OPERATING PROCEDURE/APPROVAL FORM  
FOR CARCINOGENS**

**Instructions:** Please complete this form to request approval to use and possess carcinogenic material as required by Chapter 12 of the University Chemical Hygiene Plan and University Policy 7-37.

**Submit a separate form for each chemical.** Copies of the current guidelines and Chemical Hygiene Plan are available at the DEHS web site: <http://www.udel.edu/EHS/>. For questions, please contact the University Chemical Hygiene Officer at 831-2103.

**Form Updated: January 2017**

**Section I – Information**

1. Principal Investigator(s): \_\_\_\_\_
2. E-Mail Address: \_\_\_\_\_
3. Department: \_\_\_\_\_
4. Address: \_\_\_\_\_
5. Phone Number: \_\_\_\_\_
6. Fax Number: \_\_\_\_\_
7. Lab(s) to be Used: \_\_\_\_\_
8. Chemical: Formaldehyde and Formaldehyde Solutions

**Section II – Use and Storage**

**A. Purchasing**

All purchases of this material must have approval from the Principal Investigator (PI) or authorized personnel before ordering. The user is responsible to ensure that a current Material Safety Data Sheet (MSDS) is obtained unless a current one is already available within the laboratory. Quantities of this material will be limited to \_\_\_\_\_, and/or the smallest amount necessary to complete the experiment.

**B. Authorized personnel**

Please select the general categories of personnel who could obtain approval to use this material:

1.  Principal Investigator
2.  Graduate Students
3.  Undergraduates
4.  Technical Staff
5.  Post Doctoral Employees
6.  Other (Describe): \_\_\_\_\_

Please list the specific personnel and their approval level (Attach an addendum to this form for additional personnel):

## Formaldehyde and Formaldehyde Solutions



### A. Training requirements:

All users must demonstrate competency and familiarity regarding the safe handling and use of this material prior to purchase. The Principal Investigator is responsible for maintaining the training records for each user of this material. Training should include the following:

1. Review of current MSDS
2. Review of the OSHA Lab Standard
3. Chemical Hygiene/Safety Training
4. Chemical Waste Disposal Training
5. Review of the Chemical Hygiene Plan
6. Special training provided by the department/supervisor (Right to Know)
7. Review of the departmental safety manual if applicable
8. Safety meetings and seminars
9. One-on-One hands-on training with the Principal Investigator or other knowledgeable laboratory personnel.
10. Other: \_\_\_\_\_

### B. Personal Protective Equipment:

All personnel are required to wear the following personal protective equipment whenever handling this material:

1. Proper Laboratory Attire (Pants or dresses/shorts below the knees, sleeved shirt, closed-toe shoes)
2. Safety Glasses – **Researchers must upgrade to chemical safety splash goggles if a splash, spray or mist hazard exists. In general, safety glasses can be worn if the fume hood sash is properly positioned to provide the splash, spray and mist protection, otherwise indirect venting chemical safety splash goggles must be worn.**
3. Lab Coat

Personnel may be required to wear other Personal Protective Equipment when working with this material. The Principal Investigator should contact the University Chemical Hygiene Officer to discuss the selection of chemical protective clothing (aprons, suits and gloves) and respirators. Please check all that apply:

1. <input type="checkbox"/> Chemical Safety Splash Goggles	2. <input type="checkbox"/> Face Shield
3. <input type="checkbox"/> Chemical Protective Gloves (Describe): <u>Butyl, Nitrile, Viton</u>	
4. <input type="checkbox"/> Chemical Protective Clothing (Describe): _____	
5. <input type="checkbox"/> Chemical Protective Splash Apron (Describe): _____	
6. <input type="checkbox"/> Respirator (Type): _____	
7. <input type="checkbox"/> Other (Describe): _____	

### **C. Safe Work Practices**

The following safe work practices should be employed when using this material:

1. Wear all required personal protective equipment
2. Cover open wounds
3. Wash hands thoroughly when work with the material is completed
4. No mouth pipetting
5. Use of sharps, such as glass Pasteur pipettes, needles, razor blades, etc. should be avoided or minimized
6. Must not work alone in the laboratory
7. Avoid smoking, naked lights, heat or ignition sources
8. Please list any other safe work practices:

### **D. Personnel Decontamination, Emergency Actions and First Aid**

For most exposures, decontamination should occur as follows:

1. Small Skin Exposures –
  - a. Wash contaminated skin in sink with tepid water for 15 minutes
  - b. Have partner locate the MSDS
  - c. Wash skin with soap and water
  - d. Contact Environmental Health and Safety at 831-8475 for further direction
2. Eye Exposure –
  - a. Locate the emergency eye wash
  - b. Turn eye wash on and open eyelids with fingers
  - c. Rinse eyes for 15 minutes
  - d. Have partner contact 911 for the Newark Campus, 9-911 for all others and locate the MSDS
  - e. Notify Environmental Health and Safety at 831-8475
3. Large Body Area Exposure –
  - a. Locate the emergency safety shower
  - b. Stand under shower and turn it on
  - c. Rinse whole body while removing all contaminated clothing
  - d. Have partner contact 911 for the Newark Campus, 9-911 for all others and locate the MSDS
  - e. Rinse body for 15 minutes
  - f. Notify Environmental Health and Safety at 831-8475
4. Ingestion Emergencies –
  - a. If swallowed do NOT induce vomiting.
  - b. If vomiting occurs, lean patient forward or place on left side (head-down position, if possible) to maintain open airway and prevent aspiration.
  - c. Never give liquid to a person showing signs of being sleepy or with reduced awareness; i.e. becoming unconscious

- d. Have partner contact 911 for the Newark Campus, 9-911 for all others and locate the MSDS
  - e. Notify Environmental Health and Safety at 831-8475
5. Inhalation Emergencies –
- a. If fumes or combustion products are inhaled remove from contaminated area.
  - b. Lay patient down. Keep warm and rested.
  - c. Prostheses such as false teeth, which may block airway, should be removed, where possible, prior to initiating first aid procedures.
  - d. Apply artificial respiration if not breathing, preferably with a demand valve resuscitator, bag-valve mask device, or pocket mask as trained. Perform CPR if necessary.
  - e. Have partner contact 911 for the Newark Campus, 9-911 for all others and locate the MSDS
  - f. Notify Environmental Health and Safety at 831-8475
6. Injection Emergencies –
- a. Clean the areas with soap and water
  - b. Allow the wound to bleed
  - c. Have partner contact 911 for the Newark Campus, 9-911 for all others and locate the MSDS
  - d. Notify Environmental Health and Safety at 831-8475

Please list any special decontamination procedures: \_\_\_\_\_

#### E. Exposure Symptoms

Please list the emergency procedures to be followed in the event of an exposure. These will be found in the MSDS for the compounds:

1. **Skin Contact Symptoms:** Skin contact with the material may be harmful; systemic effects may result following absorption. Skin contact with the material may produce toxic effects; systemic effects may result following absorption. The material can produce chemical burns following direct contact with the skin. Sensitization may result in allergic dermatitis responses including rash, itching, hives or swelling of extremities. Toxic effects may result from skin absorption. The material may cause severe skin irritation after prolonged or repeated exposure and may produce on contact skin redness, swelling, and the production of vesicles, scaling and thickening of the skin.
2. **Eye Contact Symptoms:** The material can produce chemical burns to the eye following direct contact. Vapors or mists may be extremely irritating. If applied to the eyes, this material causes severe eye damage. The material may produce severe irritation to the eye causing pronounced inflammation. Repeated or prolonged exposure to irritants may produce conjunctivitis.
3. **Ingestion Symptoms:** Accidental ingestion of the material may be harmful; animal experiments indicate that ingestion of less than 150 gram may be fatal or may produce serious damage to the health of the individual. Toxic effects may result from the accidental ingestion of the material; animal experiments indicate that ingestion of less than 40 gram may be fatal or may produce serious damage to the health of the individual. The material can produce chemical burns within the oral cavity and gastrointestinal tract following ingestion. Considered an unlikely route of entry in commercial/industrial environment.
4. **Inhalation Symptoms:** Harmful by inhalation. Toxic by inhalation. If inhaled, this material can irritate the throat and lungs of some persons. Inhalation of vapor may aggravate a pre-existing respiratory condition such as asthma, bronchitis, emphysema.

## 5. Injection Symptoms: May be fatal

The ChemWatch MSDS, which is available at <http://www.udel.edu/EHS/> oftentimes, has treatment information for Emergency Room Personnel and Doctors to follow. Please list any information that can be provided to assist with the treatment:

For acute or short-term repeated exposures to formaldehyde:

### INGESTION:

- Patients present early with severe corrosion of the gastro-intestinal tract and systemic effects.
- Inflammation and ulceration may progress to strictures.
- Severe acidosis results from rapid conversion of formaldehyde to formic acid. Coma, hypotension, renal failure and apnea complicate ingestion.
- Decontaminate by dilution with milk or water containing ammonium acetate; vomiting should be induced. Follow with gastric lavage using a weak ammonia solution (converts formaldehyde to relatively inert pentamethylenetetramine)
- Gastric lavage is warranted only in first 15 minutes following ingestion.

### SKIN:

- Formaldehyde can combine with epidermal protein to produce a hapten-protein couples capable of sensitizing T-lymphocytes. Subsequent exposures cause a type IV hypersensitivity reaction (i.e. allergic contact dermatitis).

[Ellenhorn Barceloux: Medical Toxicology].

## F. Spills

The laboratory should be prepared to clean up minor spills (25 ml/25 g or less) of highly toxic/carcinogenic materials should they occur in a properly operating fume hood. Chemical spill cleanup guidance can be found at <http://www1.udel.edu/ehs/waste/chemical-spill-kit.html> Laboratory personnel cleaning up a spill will wear all personal protective equipment listed above and manage all cleanup debris according the waste disposal section. Notify EHS of any spills, even if the lab staff handled the clean-up.

Please list the following:

1. Location of Spill Cleanup Materials for a small spill: \_\_\_\_\_
2. Any special measures/cleanup material required to cleanup a spill: Clean up all spills immediately. Wear protective clothing, impervious gloves and safety glasses. Avoid breathing vapors and contact with skin and eyes. Remove all ignition sources. Wipe up and absorb small quantities with vermiculite or other absorbent material. Place in suitable containers for disposal.

If a spill is large or occurs outside of a fume hood, the laboratory occupants should immediately vacate the laboratory, close all doors and contact Environmental Health & Safety at 831-8475 during working hours or 911 after hours. If the laboratory personnel determine that the spill is not contained to the lab or could cause harm to people outside the laboratory, they should pull the building fire alarm and go to the emergency gathering point to await the University Police and Emergency Responders. The responsible/knowledgeable person should provide the University Police and the Emergency Responders with the following:

1. Common Name of the Material Involved
2. A copy of a MSDS, if possible
3. Any pertinent information related to the emergency, such as location in the lab, other hazards in the lab, etc.

### **G. Emergency Phone Numbers:**

Below are a list of emergency numbers to contact in the event of an emergency:

1. Police, Fire or Medical Emergency, call – 911 on the Newark Campus, 9-911 for all others
2. Environmental Health & Safety – X8475

Please provide a list of other emergency phone numbers, such as after hour contacts for laboratory personnel or any other important phone number, to be used in the event of an emergency: \_\_\_\_\_

### **H. Other Special precautions**

Please list any other special precautions or procedures not listed in the above sections. Please be as specific as possible: \_\_\_\_\_

### **I. Chronic Health Effects**

Cumulative effects may result following exposure\*. There has been concern that this material can cause cancer or mutations, but there is not enough data to make an assessment. There is some evidence that inhaling this product is more likely to cause a sensitization reaction in some persons compared to the general population. Skin contact with the material is more likely to cause a sensitization reaction in some persons compared to the general population. Principal routes of exposure are usually by inhalation of vapor and skin contact/absorption. Sensitization may give severe responses to very low levels of exposure, i.e. hypersensitivity. Sensitized persons should not be allowed to work in situations where exposure may occur. Prolonged or repeated skin contact may cause drying with cracking, irritation and possible dermatitis following. Minor but regular methanol exposures may affect the central nervous system, optic nerves and retina. Symptoms may be delayed, with headache, fatigue, nausea, blurring of vision and double vision. Continued or severe exposures may cause damage to optic nerves, which may become severe with permanent visual impairment even blindness resulting. **WARNING:** Methanol is only slowly eliminated from the body and should be regarded as a cumulative poison which cannot be made non-harmful [CCINFO]. When administered by inhalation, formaldehyde induced squamous cell carcinomas of the nasal cavity in rats of both sexes. Although excess occurrence of a number of cancers has been reported, the evidence for a possible involvement of formaldehyde is strongest for nasal and nasopharyngeal cancer. The occurrence of these cancers showed an exposure- response gradient in more than one study, but the numbers of exposed cases were often small and some studies did not show excesses in a human's formaldehyde exposure has been associated with cancers of the lung, nasopharynx and oropharynx and nasal passages.

### **Section VI – Waste Disposal**

The authorized person using this material is responsible for the safe collection, preparation and proper disposal of waste unless otherwise stated below. Waste shall be disposed of as soon as possible and in accordance with all laboratory and University procedures. All personal must obtain chemical waste disposal training via DEHS.

Specific instructions:

Collect solid waste material in a 7mil polyethylene bag and label with an orange chemical waste label. Collect liquid waste in a "Justrite" container provided by DEHS. Label with a hazardous waste label. Use proper laboratory ventilation such as a fume hood to manage both liquid and solid wastes. Contact DEHS for removal. Do not put in the normal trash or pour any solutions down the drain.

**Section V – Signature and Verification**

Your signature below indicates that you have completed this form accurately to the best of your knowledge, you acknowledge all requirements and restrictions of this form and that you accept responsibility for the safe use of the material.

1. Prepared By: \_\_\_\_\_

Date: \_\_\_\_\_

Signature: \_\_\_\_\_

2. Principal Investigator: \_\_\_\_\_

Date: \_\_\_\_\_

Signature: \_\_\_\_\_

**Section VI – Approval Process**

**A. Departmental Chemical Hygiene Officer Approval**

The Principal Investigator should have this form completed as accurately as possible. Meet with the local Departmental Chemical Hygiene Officer and review the SOP.

1. Departmental CHO: \_\_\_\_\_ Date: \_\_\_\_\_

Signature: \_\_\_\_\_

**B. University Chemical Hygiene Officer Approval**

The Principal Investigator should have this form completed as accurately as possible. Please e-mail or fax this form to the University Chemical Hygiene Officer. The CHO will review and verify the form and make and necessary changes or updates.

2. University CHO: \_\_\_\_\_ Date: \_\_\_\_\_

Signature: \_\_\_\_\_

**C. Approval Expiration**

The approval for use and purchase of this material will expire should any of the approved information change, with the exception of Section II, B and C, Authorized Personnel and Storage Location, or two years after CHC approval. If, at the end of two years, the procedure is substantially the same, the Principal Investigator can complete a renewal form and send it to the University CHO, who can approve the renewal for an additional two years.

## CHECKLIST FOR POSSESSION AND USE OF CARCINOGENS AND HIGHLY TOXIC MATERIALS

The checklist is provided to assist a researcher with the approval process for possession and use of carcinogens and highly toxic materials. This form may be kept on file in the laboratory with the SOP to serve as documentation. The complete procedure can be found in the University Chemical Hygiene Plan in Chapter 12.

Date and Initial	
_____	1. Complete a Standard Operating Procedure/Approval Form For Carcinogens and Highly Toxic Materials and submit this form to EHS for review
_____	2. Review and make EHS's changes and recommendations
_____	3. Meet with a member of the University Chemical Hygiene Committee to review the approval form and the use of the material.
_____	4. Submit (via campus mail) the completed and signed form back to the University Chemical Hygiene Officer for conditional approval to purchase and use the material. The University Chemical Hygiene Committee will review this form at the next scheduled meeting for full approval.
_____	5. Complete a Job Hazard Analysis (JHA) for each experiment in which this compound is used. These JHAs must be kept on file in the laboratory and updated every 5 years or when a process changes.
_____	6. Provide and document training for every worker who will use the material. Training shall include hands-on instruction as well as review of the JHA, SOP and the University Chemical Hygiene Plan; specifically Chapter 12.
_____	7. Conduct a trial run with EHS present.
_____	8. Have EHS present the first time a process using this material occurs.