

UT Health Science Center: HM5205 - Formaldehyde Exposure	
Version 1	Publication Date: 10/02/2023

Objective

To comply with the Tennessee Occupational Safety and Health Administration's (TOSHA) Formaldehyde Standard and maintain formaldehyde exposures below the TOSHA occupational exposure limits.

Scope and Applicability

UTHSC employees who use or come in contact with formaldehyde and/or associated materials, such as paraformaldehyde and formalin, under normal working conditions or during emergencies.

Definitions

1. *Formaldehyde* - The chemical substance, which has various hazards associated with it. For the purposes of this policy, formaldehyde includes all compounds of formaldehyde such as paraformaldehyde and formalin. The Chemical Abstracts Service (CAS) Registry No. is 50-00-0. This number can be used to find a Safety Data Sheet (SDS) for formaldehyde.
2. *Authorized personnel* - Means any person required by work duties to be present in regulated areas and authorized to do so by the employer.
3. *Normal work conditions* - Any activities that are completed during a typical work shift as listed in the employee's job description.
4. *Emergency* - Is any occurrence, such as but not limited to equipment failure, rupture of containers, or failure to control equipment that results in an uncontrolled release of a significant amount of formaldehyde.
5. *Gross Anatomy Lab* - is the anatomy lab where students dissect cadavers that contain formaldehyde.
6. *Occupational Health and Safety Administration Formaldehyde Standard (OSHA Formaldehyde Standard)* - A standard established by the Federal regulatory agency to control occupational exposures to formaldehyde through the use of action levels, permissible exposure limits, short term exposure limits addressing airborne concentrations. The reference number for this standard is 29 CFR 1910.1048.
7. *Action Level (AL)* - Means a concentration of 0.5 parts formaldehyde per million parts of air (0.5 ppm) calculated as an eight (8)-hour time-weighted average (TWA) concentration, at which an assessment of exposure must begin.
8. *Permissible Exposure Limits (PEL)* - The time-weighted-average concentration for a conventional 8-hour workday (0.75 ppm) and a 40-hour workweek below which nearly all employees may be repeatedly exposed, day after day, without adverse effect.
9. *Professor* - is the instructor of the Gross Anatomy Lab

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10. *Short Term Exposure Limits (STEL)* - A 15-minute TWA exposure (2.0 ppm), which should not be exceeded at any time during a workday even if, the 8-hour exposure is within the OSHA-PEL as

Responsibilities

1. **College Dean/Department Chair/Department Director**
 - Ensure work area supervisors comply with the UTHSC procedure for formaldehyde.

2. **Work Area Supervisor/ Program Leader/Principal Investigator (PI)**
 - Identify processes that required personnel to handle formaldehyde or formaldehyde-related materials (e.g., formalin, PFA, etc.).
 - Ensure personnel working with formaldehyde or any formaldehyde-related materials are familiar with the requirements of this procedure.
 - Notify UTHSC Campus Safety department of processes or personnel that may be exposed to formaldehyde.
 - Ensure personnel working with formaldehyde are aware of the hazards associated with formaldehyde. This may include a review of Safety Data Sheets (SDS) or similar hazard information.
 - Ensure that personnel with the potential to be exposed above the Action Level complete formaldehyde hazard awareness training initially, when there is a change in production, equipment, process, personnel, or control measures which may result in a new or additional exposure to formaldehyde, and annually thereafter.
 - Provide personnel with proper Personal Protective Equipment (PPE) and instructions in the use, maintenance, and limitations of this equipment.
 - Ensure personnel properly use PPE when handling formaldehyde.
 - Ensure personnel can locate and use chemical spill kits or contact the campus spill response team.
 - Ensure personnel can report formaldehyde exposures and work area safety concerns.
 - Ensure that employees whose responsibilities involve the potential for exposure above the AL or STEL, or who experience symptoms of formaldehyde exposure, participate in the University Health Services medical surveillance program.

3. **Employees in work areas where formaldehyde is handled:**
 - Understand the hazards associated with exposure to formaldehyde.
 - Comply with work practices identified by the work area supervisor.
 - Wear PPE as directed by the work area supervisor.

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- Complete initial and annual formaldehyde training if working in areas where formaldehyde exposure may exceed the Action Level
- Participate in the medical surveillance program if working in areas where formaldehyde exposure may exceed the Action Level.
- Report exposures to the work area supervisor
- Report safety concerns to Campus Safety or their work area supervisor

4. Campus Safety

- Maintain the campus Formaldehyde procedure.
- Perform formaldehyde exposure monitoring when necessary.
- Communicate personal exposure monitoring results to employees and supervisors.
- Provide formaldehyde training as required by the TOSHA Formaldehyde Standard.
- Provide respirator fit testing and training for personnel required to wear respirators.
- Maintain documentation as necessary to support this program (e.g., personal monitoring records, fit testing, etc.)

5. University Health Services (UHS)

- Provide medical surveillance in accordance with OSHA Formaldehyde Standard requirements.
- Provide medical approval for respirator users capable of wearing a respirator.
- Maintain medical records pertaining to the formaldehyde medical surveillance program and approval for respirator users.

Procedure

1. Supervisors must identify work areas where personnel handle formaldehyde or formaldehyde solutions, communicate the hazards of formaldehyde and safe work procedures to their employees and notify Campus Safety of the handling of formaldehyde solution.
2. If formaldehyde exposure monitoring results identify the potential for personnel to be exposed at or above the PEL, and/or STEL, the work area supervisor shall work with Campus Safety and UTHSC Facilities to take appropriate corrective action, including:
 - Assess the work practices of the affected employee.
 - Develop a written plan describing corrective actions being taken to reduce exposure below the AL, PEL, and/or STEL.
 - Provide a copy of the plan to affected employees.
 - Ensure employee completes UHS formaldehyde medical evaluation questionnaire and submit to UHS for review.

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- Implement additional engineering controls if available.
3. If corrective measures do not maintain exposure below the PEL and/or STEL, after consultation with Campus Safety, the affected employee shall be supplied with appropriate respiratory protection in coordination with Campus Safety and enrolled into the Campus Respiratory Protection Program until the hazard can be mitigated by a more adequate control measure.
4. **Exposure Monitoring**
- Personnel potentially exposed to formaldehyde shall be identified by various means (e.g., assessments and surveys), classified into exposure groups based on level of anticipated risk, and included in the sampling strategy for initial exposure monitoring.
 - Campus Safety shall periodically measure and accurately determine exposure to formaldehyde for employees shown by the initial monitoring to be exposed at or above the action level or at or above the STEL.
 - Monitoring shall be repeated each time there is a change in production, equipment, process, personnel, or control measures which may result in a new or additional exposure to formaldehyde. Note:
 - i. It is prohibited to rotate employees for the purpose of limiting the exposure.
 - ii. Monitoring shall be terminated if results from two consecutive sampling periods taken at least 7 days apart show that employee or student exposure is below the AL, PEL, and the STEL unless periodic monitoring is specifically requested by the laboratory and Campus Safety.
5. **Notification of Monitoring Results**
- Within 15 days of receiving monitoring results, Campus Safety shall provide written notification to the monitored employee, their supervisor, and University Health Services.
6. **Regulated Areas**
- When repeated monitoring results shows the concentration of airborne formaldehyde is above the PEL and/or STEL, the Supervisor shall establish the area as a “regulated area” and post all entrances and accesses with observable signs containing these words:

DANGER
FORMALDEHYDE
IRRITANT AND POTENTIAL CANCER HAZARD
AUTHORIZED PERSONNEL ONLY

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- Access to regulated area shall be restricted to authorized personnel who have been trained to recognize the hazards of formaldehyde and to work safely using PPE.

7. Respiratory Protection

- Respirator use shall only be permitted when engineering controls cannot be implemented, the current controls are not able to reduce exposure below the PEL/STEL, during the period of time before the installation of engineering controls, or during emergencies where exposure could exceed the PEL/STEL.
- Whenever respirator use is required, the employee shall be provided by their laboratory with an appropriate National Institute for Occupational Safety and Health (NIOSH) approved respirator at no cost, trained on proper use, and shall use it properly.
- Campus Safety will consult with the work area supervisor to select a respirator that reduces air-borne concentration of formaldehyde inhaled by the employee/student to at or below TWA or STEL.
- Campus Safety maintains a written respiratory protection program in accordance with the OSHA respiratory protection standard and provides training and fit testing for respirator users.
- Employees must obtain medical clearance from the University Health Services before fit testing and respirator use.

8. Protective Equipment and Clothing

- Personal protective equipment (PPE) such as lab coats, gloves, goggles, face shields appropriate for use with formaldehyde, shall be provided at no cost to employees. The Supervisor shall ensure that employees:
 - Use appropriate PPE when working with formaldehyde.
 - Avoid contact of the eyes and skin with liquids containing one (1%) percent or greater formaldehyde by the use of chemical protective clothing made of material impervious to formaldehyde.
 - Use non-latex gloves, such as nitrile or butyl when handling formaldehyde.
 - Do not reuse PPE and/or clothing that has become contaminated with formaldehyde before it is cleaned or laundered.
 - Do not take home PPE or clothing contaminated with formaldehyde.
 - Are trained properly before handling or removing formaldehyde contaminated clothing.
 - Are provided a room to change contaminated clothing, if needed.
 - Have access to working eyewash and emergency showers and are trained to use them in case of emergency.

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- Any person who launders, cleans, or repairs formaldehyde contaminated clothing or equipment shall be informed of formaldehyde’s potentially harmful effects and procedures to safely handle such material.

9. Housekeeping

- The workplace shall be maintained clean and free from formaldehyde contaminated debris.
- Formaldehyde contaminated debris and waste resulting from spills or other activities shall be placed for disposal in sealed container bearing label warning formaldehyde’s presence and its hazards.
- Employees involved in clean up or maintenance should be informed about the hazards associated with formaldehyde exposure during such activities

10. Hazard Communication

- All provisions of this program shall be enforced in work areas where formaldehyde is used.
- Hazard warning labels that are in accordance with the Globally Harmonized System (GHS) and identify if the product contains formaldehyde shall be placed on the containers.
- Labels shall inform users of “Potential Cancer Hazard”.
- SDS shall be made accessible to employees

Emergency Contacts

1. The work area supervisor shall be the primary contact and shall establish appropriate procedures and communicate to their employees and students respond to and properly report injuries or exposures.
2. Employees exposed to formaldehyde causing a medical emergency shall seek immediate care and contact Corvel within 24 hours after the medical emergency has been treated and is no longer an emergency.
3. Employees that experience non-emergency symptoms shall call Corvel within 24 hours and shall submit a formaldehyde medical evaluation questionnaire to University Health Services.

Medical Surveillance and Examinations

- UTHSC shall institute a medical surveillance program for employees exposed to formaldehyde at concentrations at or exceeding the action level or exceeding the STEL.

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- UTHSC formaldehyde medical surveillance program is provided to affected employees only by University Health Services in a manner consistent with the OSHA Formaldehyde Standard.

Record Keeping

- **Exposure Measurements**
 - a. Campus Safety maintains formaldehyde exposure monitoring records.
 - b. Records shall include:
 - Date of measurement.
 - Operation being monitored.
 - Method of sampling and analysis
 - Number, duration, time, and results of samples taken.
 - Type of protective device worn.
 - Names, job title, UNI numbers and exposure estimates.
- **Respirator Fit Testing**
 - a. The Campus Safety maintains records of training and fit testing for reusable respirators and N95 respirators
 - b. The record shall include:
 - Employee name, job title and employee/student ID number.
 - A copy of the completed Respirator Medical Clearance Form.
 - A copy of the completed Respirator Fit Test Record.
 - The date of the most recent fit test
 - Manufacturer, model, size & type of respirator provided to the employee
- **Training**
All training records will be maintained by Campus Safety.
- **Medical**
 - a. All medical records will be maintained by UHS.
- **Retention of Records**
 - a. The records shall be retained for at least the following periods:
 - Exposure records and determinations shall be kept for at least 30 years.
 - Medical records shall be kept for the duration of employment plus 30 years
 - Respirator fit testing records shall be kept until they are replaced by a more recent record.

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References

1. OSHA Standard 29 CFR 1910.1048. Occupational Exposure to Formaldehyde (http://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=STANDARDS&p_id=10075)
2. Policy for Personal Protective Equipment in Research Laboratories (<https://research.columbia.edu/system/files/EHS/Policies/PPE.pdf>)

Forms

1. Medical Evaluation Questionnaire

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UNIVERSITY HEALTH SERVICES
910 Madison Avenue, Ste. 922
Memphis, TN 38163
Telephone: (901) 448-5630
Fax: (901) 448-7255

Formaldehyde Medical Evaluation Questionnaire

The OSHA Formaldehyde Standard (29 CFR 1910.1048) requires that employers institute a medical surveillance program for all employees exposed to formaldehyde at concentrations at or exceeding the action level (0.5 ppm 8-hour time-weighted average) or exceeding the STEL (2.0 ppm over any 15-minute period). This medical evaluation questionnaire is part of the UTHSC University Health Services medical surveillance program. Please complete this questionnaire and return by email to the Occupational Health Coordinator at eoHS@uthsc.edu. A health care professional can be contacted at this email address with questions or concerns.

Date: _____ Name: _____ Employee Number: _____

Height ft. _____ in. Weight _____ lbs. Birth date: _____

Phone number where you can be reached by the health care professional who review this questionnaire: (_____)

The best time to phone you at this number: AM PM

Has your employer told you how to contact the health care professional who will review this questionnaire: YES NO

Yes / No

		1. Have you ever been in the hospital as a patient? If yes, what kind of problem(s) were you having?
		2. Have you ever had any kind of operation? If yes, what kind?
		3. Do you take any kind of medicine regularly? If yes, what kind?
		4. Are you allergic to any drugs, foods, or chemicals? If yes, what kind?
		What causes the allergy?
		5. Have you ever been told that you have asthma, hay fever, or sinusitis?
		6. Have you ever been told that you have emphysema, bronchitis, Or any other respiratory problems?
		7. Have you ever been told you had hepatitis?
		8. Have you ever been told that you had cirrhosis?
		9. Have you ever been told that you had cancer?
		10. Have you ever had arthritis or joint pain?
		11. Have you ever been told that you had high blood pressure?
		12. Have you ever had a heart attack or heart trouble?

B-1 Medical History Update

		1. Have you been in the hospital as a patient any time within the past year? If so, for what condition?
		2. Have you been under the care of a physician during the past year? If so, for what condition?
		3. Is there any change in your breathing since last year? Better _ Worse _ No change __ If change, do you know why?
		4. Is your general health different this year from last year? If different, in what way?
		5. Have you in the past year or are you now taking any medication on a regular basis? Name of Rx: _____ Condition being treated: _____

C. Occupational History

1. How long have you worked for your present employer?
2. What jobs have you held with this employer? Include job title and length of time in each job.
3. In each of these jobs, how many hours a day were you exposed to chemicals? Yes __ No __
4. What chemicals have you worked with most of the time?
5. Have you ever noticed any type of skin rash you feel was related to your work? Yes __ No __
6. Have you ever noticed that any kind of chemical makes you cough? Yes __ No __
Wheeze? Yes __ No __
Become short of breath or cause your chest to become tight? Yes __ No __
7. Are you exposed to any dust or chemicals at home? Yes __ No __ If yes, explain: _____
8. In other jobs, have you ever had exposure to: Wood Dust? Yes __ No __
Nickel or Chromium? Yes __ No __
Silica (foundry, sand blasting)? Yes __ No __
Arsenic or asbestos? Yes __ No __
Urethane foams? Yes __ No __
Organic Solvents? Yes __ No __

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C-1 Occupational Health Update
1. Are you working on the same job this year as you were last year? Yes__ No__ If not, how has your job changed?
2. What chemicals are you exposed to on your job?
3. How many hours a day are you exposed to chemicals?
4. Have you noticed any skin rash within the past year you feel was related to your work? Yes__ No__ If so, explain circumstances:
5. Have you noticed that any chemical makes you cough, be short of breath, or wheeze? Yes__ No__ If so, can you identify it?
D. Miscellaneous
1. Do you smoke? Yes__ No__ If so, how much and for how long?
2. Do you drink alcohol in any form? Yes__ No__ If so, how much, how long, and how often?
3. Do you wear glasses or contact lenses? Yes__ No__
4. Do you get any physical exercise other than that required to do your job? Yes__ No__ If so, explain:
5. Do you have any hobbies or "side jobs" that require you to use chemicals, such as furniture stripping, sand blasting, insulation or manufacture of urethane foam, furniture, etc.? Yes__ No__ If so, please describe, giving type of business or hobby, chemicals used and length of exposures.
E. Symptoms Questionnaire
1. Do you ever have any shortness of breath? Yes__ No__ If yes, do you have to rest after climbing several flights of stairs? Yes__ No__ If yes, if you walk on the level with people your own age, do you walk slower than they do? Yes__ No__ If yes, if you walk slower than a normal pace, do you have to limit the distance that you walk? Yes__ No__ If yes, do you have to stop and rest while bathing or dressing? Yes__ No__
2. Do you cough as much as three months out of the year? Yes__ No__ If yes, have you had this cough for more than two years? Yes__ No__ If yes, do you ever cough anything up from chest? Yes__ No__
3. Do you ever have a feeling of smothering, unable to take a deep breath, or tightness in your chest? Yes__ No__ If yes, do you notice that this on any particular day of the week? Yes__ No__ If yes, what day or the week? Yes__ No__ If yes, do you notice that this occurs at any particular place? Yes__ No__ If yes, do you notice that this is worse after you have returned to work after being off for several days? Yes__ No__
4. Have you ever noticed any wheezing in your chest? Yes__ No__ If yes, is this only with colds or other infections? Yes__ No__ Is this caused by exposure to any kind of dust or other material? Yes__ No__ If yes, what kind?
5. Have you noticed any burning, tearing, or redness of your eyes when you are at work? Yes__ No__ If so, explain circumstances:
6. Have you noticed any sore or burning throat or itchy or burning nose when you are at work? Yes__ No__ If so, explain circumstances:
7. Have you noticed any stuffiness or dryness of your nose? Yes__ No__
8. Do you ever have swelling of the eyelids or face? Yes__ No__
9. Have you ever been jaundiced? Yes__ No__ If yes, was this accompanied by any pain? Yes__ No__
10. Have you ever had a tendency to bruise easily or bleed excessively? Yes__ No__
11. Do you have frequent headaches that are not relieved by aspirin or Tylenol? Yes__ No__ If yes, do they occur at any particular time of the day or week? Yes__ No__ If yes, when do they occur?_
12. Do you have frequent episodes of nervousness or irritability? Yes__ No__
13. Do you tend to have trouble concentrating or remembering? Yes__ No__

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14. Do you ever feel dizzy, light-headed, excessively drowsy or like you have been drugged? Yes__ No__
15. Does your vision ever become blurred? Yes__ No__
16. Do you have numbness or tingling of the hands or feet or other parts of your body? Yes__ No__
17. Have you ever had chronic weakness or fatigue? Yes__ No__
18. Have you ever had any swelling of your feet or ankles to the point where you could not wear your shoes? Yes__ No__
19. Are you bothered by heartburn or indigestion? Yes__ No__
20. Do you ever have itching, dryness, or peeling and scaling of the hands? Yes__ No__
21. Do you ever have a burning sensation in the hands, or reddening of the skin? Yes__ No__
22. Do you ever have cracking or bleeding of the skin on your hands? Yes__ No__
23. Are you under a physician's care? Yes__ No__ If yes, for what are you being treated?
24. Do you have any physical complaints today? Yes__ No__ If yes, explain?
25. Do you have other health conditions not covered by these questions? Yes__ No__ If yes, explain:

Employee's Signature: _____ Date: _____

**For UHS use
only**

Restriction/Remarks:

Occupational Health Nurse Signature: _____ Date: _____