Portland State UNIVERSITY

Environmental Health and Safety

Title of SOP:	Formaldehyde Hazard Communication Program	
SOP Originator: Rita Sumner, Chuck Cooper	**Date Created:** 06/02/2010	**Effective Date:**
Name:	**Name:**	**Last edited Date:** 08/08/2017
EHS Reviewer: Lindsay Henderson	**Date Reviewed:** 08/08/2017	**Document #:**

Purpose:

The Formaldehyde Hazard Communication Plan is designed to communicate associated hazards and establish procedures in regards to regulatory requirements, best practices, and exposure reduction strategies during the handling of formaldehyde-containing materials on the PSU campus. This document serves as the PSU written Formaldehyde Hazard Communication Plan as required under the Oregon OSHA rule.

Scope:

This plan applies to all University employees who are either responsible for or assigned to work areas (including academic field activities) where there is a likelihood of exposure to formaldehyde gas, its solutions composed of greater than 0.1 percent formaldehyde, and materials capable of releasing formaldehyde into the air, under reasonably foreseeable conditions of use, at concentrations reaching or exceeding 0.1 parts per million (ppm).

While technically outside the scope of the Oregon OSHA regulation (Div. 2/Z 1910.1048), departments are encouraged to submit requests to EHS for consultation regarding student academic laboratories to ensure that a safe learning environment is maintained.

Jobs/Tasks Involving Formaldehyde

Work activities that are known or suspected to involve formaldehyde include, but may not be limited to the following:

- Preparing cadavers for anatomy and physiology courses
- Instructing anatomy and physiology courses using a cadavers

Authority:

Agency: Oregon Occupational Safety and Health Division
Rule: OAR 437-002-0360 (29 CFR 1048 and amendments adopted by reference)

Responsibilities:

Departments

- Identify faculty and/or staff whose projects include the use of formaldehyde or formaldehyde-containing products.

- Identify teaching and research laboratories including field activities using formaldehyde.
- Ensure adequate resources are provided to maintain compliance with this program.

Faculty and Supervisors

- Inform EHS about each particular process that uses formaldehyde or formaldehyde-containing products.
- Develop standard operating procedures (SOPs) for handling formaldehyde.
- Maintain a readily available copy of an SDS for each product containing formaldehyde.
- Ensure that employees receive appropriate training on formaldehyde hazards, personal protective equipment, standard operating procedures, the contents of this plan, and the Oregon OSHA rule.

Staff and Students (paid)

- Attend (either online or in person) annual Formaldehyde Training.
- Perform work with formaldehyde as per established Standard Operating Procedure(s).
- Report adverse events to supervisor and complete all PSU reporting requirements as directed by Human Resources.
- Report signs or symptoms of overexposure to formaldehyde to EHS

Environmental Health and Safety

- Provide electronic and/or hard copy access to the approved written Formaldehyde Hazard Communication Plan.
- Provide training for employees who are exposed to formaldehyde at or above an 8-hour average exposure of 0.1 parts per million (ppm).
- Conduct exposure determinations and notify employees in writing of the monitoring results within 15 days of receiving results.
- Arrange for medical surveillance, respirator training and fit testing, as applicable.
- Develop a written plan to reduce employee exposure to or below both PELs, and give written notice to employees; the written notice shall contain a description of the corrective action being taken by the employer to decrease exposure.
- Maintain records of all training, exposure monitoring, respirator fit testing, and medical surveillance, as applicable.
- Provide consultative technical guidance to personnel at all levels of responsibility concerning formaldehyde including analyzing and mitigating workplace exposures and the implementation of this program.

Chemical Hygiene Committee

- Serve as the institutional governance body for this plan.
- Perform annual program review.
- Approve any changes to this written plan.

Definitions and Key Terms:

"Formaldehyde" has the chemical shorthand of HCHO. It is a colorless gas and has an irritating pungent odor. It dissolves readily in water and is found in formalin (a solution of formaldehyde, water, and methanol). For the purpose of this program, the terms formaldehyde and formalin are used interchangeably. The odor threshold is less than 1.0 ppm. However, sensitive persons may develop symptoms of exposure below the odor threshold. Formaldehyde is an eye, skin, and respiratory tract irritant. It is a potent sensitizer and probable human carcinogen. Formaldehyde is used in a variety of operations but tissue preservation is the primary source of exposure within the university community. [See Substance Technical Guideline (Appendix A of the Formaldehyde regulation (OAR 437-002-0360) and the Safety Data Sheet (SDS) from the manufacturer for additional information.]

"Action-Level" or AL is the exposure level below which respiratory protection and many other requirements of the Formaldehyde Standard need not be implemented. The current action level for formaldehyde is 0.5 ppm TWA (Time Weighted Average).

"Permissible Exposure Level" or PEL is the maximum permissible airborne exposure limit to formaldehyde, that no employee can be exposed to, that is published and enforced by Oregon OSHA as a legal standard. The TWA and the STEL (Short Term Exposure Limit) are PELs.

"Short-Term Exposure Level" or STEL is the maximum concentration of formaldehyde that workers can be exposed to continuously over a period of 15 minutes. The STEL for formaldehyde is 2.0 ppm.

"Time Weighted Average" or TWA is the actual measured exposure level averaged over an 8-hour time period. The TWA for formaldehyde is 0.75 ppm.

Exposure Monitoring:

General

- EHS will provide exposure monitoring for faculty, staff, and students (paid) to determine exposure to formaldehyde, as needed.
- EHS will monitor exposure if an individual reports signs or symptoms of respiratory or dermal conditions associated with formaldehyde exposure.
- EHS will develop a representative sampling strategy and measure sufficient exposures within each job classification for each process to correctly characterize the exposure of any employee within that exposure group.
- EHS will maintain a record of objective data relied upon to support the determination that no employee is exposed to formaldehyde at or above the AL.

Periodic Monitoring

- EHS will periodically measure and accurately determine exposure to formaldehyde for faculty and staff shown by the initial monitoring to be exposed at or above the AL, or above the STEL.
- If the last monitoring results reveal employee exposure at or above the AL, EHS will repeat monitoring at least every 6 months.
- If the last monitoring results reveal employee exposure at or above the STEL, EHS will repeat monitoring at least once a year under worst conditions.

Termination of Monitoring

- EHS may discontinue periodic monitoring of faculty and staff if the results from two consecutive sampling periods taken at least 7 days apart show that employee exposure is below the AL and the STEL.

Regulated Areas:

- Regulated areas, where the concentration of airborne formaldehyde exceeds either the Time Weighted Average (TWA) or Short Term Exposure Limit (STEL), will be posted at all entrances and access ways with signs bearing the following information:

DANGER
FORMALDEHYDE
IRRITANT AND POTENTIAL CANCER HAZARD
AUTHORIZED PERSONNEL ONLY

- Departments will limit access to regulated areas to authorized persons who have been trained to recognize the hazards of formaldehyde and to work safely using PPE.

Methods of Compliance:

General

- Departments will prioritize engineering and work practice controls to reduce and maintain employee exposures to formaldehyde at or below the TWA and STEL.
- If the Department has established that engineering and work practice controls to reduce and maintain employee exposure at or below either of the PELs are not adequate, then respirators and other PPE may be used to further reduce exposure**.**
- Work practice controls include housekeeping, waste management, emergency procedures and hygiene protection.

Engineering Controls

- Ventilation is the most universally applied engineering control method for reducing the concentration of airborne substances in the breathing zone of workers.
- Local exhaust ventilation is designed to capture airborne contaminants as near the point of generation as possible and remove it from an individual's breathing zone (e.g., downdraft tables).
- General (mechanical) ventilation is referred to as general dilution ventilation. This process involves continuous introduction of fresh air into a workspace to mix the contaminated air and lower the breathing zone concentration of formaldehyde. Effectiveness depends on the number of air changes per hour.

Personal Protective Equipment—Respiratory Protection

- Under certain circumstances, respiratory protection may be warranted. Department staff must contact EHS to evaluate a work process of concern to determine the need for respiratory protection.
- When employees are required to wear cartridge-type respirators, they must be enrolled in PSU's Respiratory Protection Program and Medical Surveillance Program, as required by Oregon OSHA.
- Where respiratory protection is required, faculty or supervisors will provide respirators at no cost to employees.
- The respirators will comply with the requirements of the standard and will reduce the concentration of formaldehyde inhaled by employee to a level at or below both the TWA and the STEL.
- Respirators will be used in the following circumstances:
  - During the interval necessary, to install or implement feasible engineering and work practice controls.
  - In work operations for which the Department establishes that engineering and work practice controls are not feasible.
  - In work situations where feasible engineering and work practice controls are not yet sufficient to reduce exposure to or below PELs.
  - In emergencies involving formaldehyde.

Personal Protective Equipment—Other Protective Equipment and Clothing

- When protective equipment or clothing is provided under this program, departments will provide these protective devices at no cost to employees, provide training in use, and will assure that employees use them properly.
- Faculty or supervisors are responsible for ensuring a hazard assessment is done to determine appropriate PPE for each work environment and/or process.

- Certain types of PPE are effective in controlling formaldehyde exposure. In normal work situations, PPE should be used only as a supplement to engineering controls.
  - Impermeable gloves: Gloves made of natural or butyl rubber, nitrile, and neoprene are recommended to protect skin from contact with formaldehyde. Latex should only be used for short-term, incidental contact is expected. In general, latex use is discouraged because of the potential for developing allergies.
  - Eye and face protection: Eye and face protection in the form of chemical splash goggles will reduce exposure in case of splash hazards. For work operations requiring a face shield to be worn due to the danger of formaldehyde reaching eye, chemical safety goggles must be worn, as well.
  - Lab coats/aprons: For protection from contamination of skin and/or personal clothing, lab coats and/or chemical resistant aprons or sleeves are recommended.

Maintenance of PPE

- Faculty or supervisors shall assure that protective equipment that becomes contaminated is appropriately cleaned or laundered before reuse or disposed of properly.
- Faculty or supervisors shall assure that employees do not take formaldehyde-contaminated PPE home for cleaning or laundering.
- Faculty or supervisors shall repair or replacement PPE as necessary to assure its effectiveness.
- Faculty or supervisors shall inform any person who launders, cleans or repairs formaldehyde-contaminated PPE of the potentially harmful effects and procedures for safe handling.

Housekeeping and Waste Management

- Faculty or supervisors shall remain vigilant in surveying areas for spills or leaks.
- If a small locally manageable spill occurs, clean up must be done by an individual who has received training in formaldehyde spill clean up and proper PPE use.
- If a larger spill occurs beyond local control, contact EHS for spill response.
- Contaminated spill clean up material and debris shall be placed in sealable containers bearing a label warning of the presence of formaldehyde and its associated hazards. Keep container in chemical fume hood if possible. Contact EHS for disposal.

Emergency Procedures and Hygiene Protection

- Faculty or supervisors will communicate 1) established work-specific procedures for handling emergencies to minimize injury, and 2) information on institutional procedures.
- Spill kits specifically designed for HCHO must be maintained in the work area where formaldehyde is used or stored.
- If there is any possibility that an employees' skin may be splashed with solutions containing 1 percent or greater formaldehyde, then a quick drench shower must be provided. Faculty and/or supervisors must provide training on the operation of equipment.
- If there is any possibility that an employee's eyes may be splashed with solutions containing 0.1 percent or greater formaldehyde, then an acceptable eyewash facility must be within the immediate work area. Faculty and/or supervisors must provide training on the operation of equipment.

Medical Surveillance:

Faculty, Staff, and Students (paid)

- EHS will adapt Appendix D of the Formaldehyde rule "Nonmandatory Medical Disease Questionnaire" for employees to complete and submit to the medical provider for medical screening.

- EHS will arrange for a medical surveillance program for all persons exposed to formaldehyde at concentrations at or exceeding the AL or exceeding the STEL.
- EHS will make medical surveillance available for all persons who develop signs and symptoms of overexposure to formaldehyde and for all persons exposed to formaldehyde in emergencies.
- When determining whether an employee may be experiencing signs and symptoms of possible overexposure to formaldehyde, EHS will rely on the evidence that signs and symptoms associated with formaldehyde exposure will occur only in exceptional circumstances when airborne exposure is less than 0.1 ppm and when formaldehyde is present in material in concentrations less than 0.1 percent.

Hazard Communication:

General

- All provisions of this program shall be enforced in all work environments including PSU sponsored fieldwork.
- Formaldehyde containing products (greater than 0.1% and materials capable of releasing airborne at or above 0.1 ppm) shall have a hazard-warning label affixed to each container.

Employee Training

- Employees assigned to work practices where formaldehyde is used must participate in training if the airborne level may exceed 0.1 ppm or if formaldehyde is present in concentrations greater than 0.1 percent.
- Employees must be trained prior to performing work with formaldehyde and annually thereafter.
- Training is usually conducted by EHS and will include the following elements:
  - Discussion of the regulation, SDSs, and labels
  - The purpose for and description of the medical surveillance program as it pertains to signs and symptoms of exposure
  - Discussion of health hazards, such as cancer, irritation and sensitization of the skin and respiratory system, eye and throat irritation and acute toxicity.
  - Instructions to report to the supervisor the development of any adverse signs or symptoms that are suspected to be attributable to HCHO exposure.
  - Descriptions of operations in the work area where formaldehyde is present and an explanation of the safe work practices appropriate for limiting exposure.
  - The purpose for, proper use of, and limitations of personal protective equipment.
  - Instructions for handling of spills, emergencies and clean up procedures.
  - The importance of engineering and safe work practices in reducing HCHO exposure.
- Training material is available from EHS upon request and without cost to employees.

Record Keeping:

Records Retention

- EHS will retain records required by the regulation for at least the following periods:
  - Exposure records and determinations will be kept for at least 30 years. Records shall include date of measurement, operation monitored, method of sampling and analysis, number, duration, time and results of samples taken, type of PPE used, names, job title, social security (or employee) number and exposure estimates
  - Medical records will be kept for the duration of employment plus 30 years (maintained by Kaiser Permanente—Occupational Medicine). EHS will maintain the medical surveillance outcome form for each individual as received from Kaiser.
  - Respirator fit test records will be kept until replaced by a more recent record.

Availability of Records

- Upon request, EHS will make all records maintained as a requirement of the standard available for examination and copying to the Assistant Secretary and the Director.
- EHS will make employee exposure records, including estimates made from representative monitoring and available upon request for examination, and copying to the subject employee, or former employee, and employee representatives in accordance with the Oregon OSHA regulation covering "Access to Employee Exposure and Medical Records."
- Employee medical records will be provided upon request for examination and copying, to the subject employee or former employee or to anyone having the specific written consent of the subject employee or former employee in accordance with the Oregon OSHA regulation "Access to Employee Exposure and Medical Records".

Program Review and Approval:

The Chemical Hygiene Committee is the Portland State University governance body in charge of reviewing and approving changes to the Formaldehyde Hazard Communication Program.