

Exposure Control Measures For Formaldehyde

This document is in accordance to WAC 296-62-07540, which applies to all occupational exposures to formaldehyde, its solutions, and materials that release formaldehyde.

All employers who have any form of formaldehyde in the workplace must monitor employee exposures unless they can objectively document that the presence of airborne formaldehyde will not exceed the action level or STEL under foreseeable conditions. If this cannot be done the employer must begin initial monitoring.

CWU will assure that no employee is exposed to an airborne concentration of formaldehyde, which exceeds .75 PPM as an 8-hour time-weighted average (TWA) or 2 PPM as a 15-minute short-term exposure limit (STEL).

CWU will 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. If the last monitoring results reveal employee exposure at or above the action level, the employer shall repeat monitoring of the employees at least every six months.

If the last monitoring results reveal employee exposure at or above the STEL, monitoring of employees will continue at least once a year under worst conditions.

Periodic monitoring for employees will discontinue if results from two consecutive sampling periods taken at least seven days apart show that employee exposure is below the action level and the STEL. The results must be statistically representative and consistent with the employer's knowledge of the job and the work operation.

ACCURACY

Monitoring shall be accurate, at the ninety-five percent confidence level, to within plus or minus twenty-five percent for airborne concentrations of formaldehyde at the TWA and the STEL and to within plus or minus thirty-five percent for airborne concentrations of formaldehyde at the action level.

EMPLOYEE NOTIFICATION

Within fifteen days of receiving the results of exposure monitoring conducted under the WISHA standard, the affected employees shall be notified of results. Notification shall be in writing, either by distributing copies of the results to the employees or by posting the results. If the employee exposure is over the permissible exposure limit (PEL), a written plan will be developed and implemented to reduce employee exposure to or below the permissible exposure limit, and notice will be given to employees. The written notice shall contain a description of the corrective action to be taken by CWU to decrease exposure.

OBSERVATION OF MONITORING

The affected employees or their designated representatives will be given an opportunity to observe any monitoring of employee exposure to formaldehyde required.

REGULATED AREAS

Regulated areas will be established where the concentration of airborne formaldehyde exceeds either the TWA or the STEL and all entrances and accessways will be posted with signs bearing the following information:

DANGER
FORMLADEHYDE
ITITANT AND POTENTIAL CANCER HAZARD
AUTHORIZED PERSONNEL ONLY

Access to regulated areas will be limited to authorized persons who have been trained to recognize the hazards of formaldehyde.

METHODS OF COMPLIANCE

Engineering and work practice controls will be instituted to reduce and maintain employee exposures to formaldehyde at or below the TWA and the STEL.

Whenever the feasible engineering and work practice controls cannot reduce employee exposure to or below the permissible exposure levels, controls shall be applied to reduce employee exposures to the extent feasible and will be supplemented with respirators.

RESPIRATORY PROTECTION

Where respiratory protection is required; CWU will supply respirators at no cost to the employee and shall assure that they are used properly. The respirators shall comply with WISHA requirements and shall reduce the concentration of formaldehyde inhaled by the employee to at or below the TWA or the STEL. Respirators shall be used in the following circumstances:

1. During the interval necessary to install or implement feasible engineering and work practice controls.
2. In work operations, such as maintenance and repair activities or vessel cleaning, for which the employer establishes that engineering and work practice controls are not feasible.
3. In work situations where feasible engineering and work practice controls are not yet sufficient to reduce exposure to or below the PEL's; and
4. In emergencies.

RESPIRATOR SELECTION

The appropriate respirators as specified in Table 1 shall be selected from those approved by the Mine Safety and Health Administration (MSHA) and by the National Institute of Occupational Safety and Health (NIOSH).

Any employee who experiences difficulty wearing a negative-pressure respirator will be supplied with a powered air-purifying respirator to protect against formaldehyde exposure.

RESPIRATOR USAGE

Whenever respirator use is required, CWU shall institute a respiratory protection program in accordance to WAC 296-62-07109, 07111, 07115, and 07117.

Table 1

Formaldehyde Concentration (PPM)	Minimum Respirator Required
Up to 7.5 PPM (10x PEL)	Full facepiece with cartridges or canisters specifically approved for protection against formaldehyde.
Up to 75 PPM (100x PEL)	Full-face mask with chin style or chest or back mounted type industrial size canister specifically approved for protection against formaldehyde.
Above 75 PPM or unknown (emergencies)	<p>Self-contained breathing apparatus (SCBA) with positive-pressure full facepiece.</p> <p>Combination supplied-air, full facepiece positive-pressure respirator with auxiliary self-contained air supply.</p>
Fire fighting	SCBA with positive-pressure in full facepiece.
Escape	<p>SCBA in demand or pressure demand mode.</p> <p>Full-face mask with chin style or front or back mounted type industrial size canister specifically approved for protection against formaldehyde.</p>

Where air-purifying chemical cartridge respirators are used, the cartridges shall be replaced after 3 hours or at the end of the workshift, whichever is sooner unless the cartridge contains NIOSH-approved end-of-service indicator to show when breakthrough occurs.

Canisters used in atmospheres up to 7.5 PPM (10x PEL) shall be replaced every four hours and industrial sized canisters used in atmospheres up to 75 PPM (100x PEL) shall be replaced every two hours or at the end of the workshift, whichever is sooner.

PROTECTIVE EQUIPMENT AND CLOTHING

CWU will comply with the provisions of WAC 296-24-07501 and 296-24-07801. Protective equipment or clothing will be provided at no cost to the employee.

SELECTION

CWU will select protective clothing and equipment based upon the form of formaldehyde to be encountered, the conditions of use, and the hazard to be prevented.

All contact of the eyes and skin with liquids containing one percent or more of formaldehyde shall be prevented by the use of chemical protective clothing made of materials impervious to formaldehyde and the use of other personal protective equipment, such as goggles and face shields, as appropriate to the operation.

Contact with irritating or sensitizing materials shall be prevented to the extent necessary to eliminate the hazard.

Where a face shield is worn, chemical safety goggles are also required if there is danger of formaldehyde reaching the area of the eye.

Full body protection shall be worn for entry into areas where concentrations exceed 100x PEL and emergency re-entry into areas of unknown concentration.

MAINTENANCE OF PROTECTIVE EQUIPMENT AND CLOTHING

Protective equipment and clothing that has become contaminated with formaldehyde will be cleaned or laundered before its reuse.

When ventilating formaldehyde-contaminated clothing and equipment, a storage area will be designated so that employee exposure is minimized. Containers for contaminated clothing and equipment and storage areas shall have labels and signs containing the following information:

DANGER
FORMALDEHYDE-CONTAMINATED (CLOTHING) EQUIPMENT
AVOID INHALATION AND SKIN CONTACT

Only persons trained to recognize the hazards of formaldehyde will be allowed to remove the contaminated material from the storage area for purposes of cleaning, laundering, or disposal.

No employee will be allowed to take home equipment or clothing that is contaminated with formaldehyde.

All required protective clothing and equipment for each affected employee will be repaired and replaced as necessary to assure effectiveness.

Any person who launders, cleans, or repairs such clothing or equipment will be notified of formaldehyde's potentially harmful effects and procedures to safely handle the clothing equipment.

HYGIENE PROTECTION

If an employee's skin may become splashed with solutions containing one percent or more of formaldehyde, showers and eyewash facilities will be provided

HOUSEKEEPING

For operations involving formaldehyde liquids or gas, a program will be implemented to detect leaks and spills, including regular visual inspections.

In work areas where spillage may occur, provisions will be made to contain spills, decontaminate work areas, and to dispose of wastes.

All leaks will be repaired and spills will be cleaned promptly by employees wearing suitable protective equipment and trained in proper methods of cleanup and decontamination.

Formaldehyde contaminated waste and debris resulting from leaks and spills shall be placed for disposal in sealed containers bearing a label warning of formaldehyde's presence and of the hazards associated with formaldehyde.

EMERGENCIES

For each workplace where there is the possibility of an emergency involving formaldehyde, appropriate procedures will be adopted to minimize injury and loss of life. Appropriate procedures will be implemented in the event of an emergency.

MEDICAL SURVEILLANCE

Medical surveillance programs will be instituted for all employees exposed to formaldehyde at concentrations at or exceeding the action level or the STEL.

Medical surveillance will be made available for employees who develop signs or symptoms of overexposure to formaldehyde and for all employees exposed to formaldehyde in emergencies.

EXAMINATION BY A PHYSICIAN

All medical procedures, including administration of medical disease questionnaires shall be performed by or under the supervision of a licensed physician and shall be provided without cost to the employee, without loss of pay, and at a reasonable time and place.

MEDICAL DISEASE QUESTIONNAIRE

The following medical surveillance will be made available to employees prior to assignment to a job where formaldehyde exposure is at or above the action level or above the STEL and annually thereafter. CWU will also make the following medical surveillance available promptly upon determining that an employee is experiencing signs and symptoms indicative of possible overexposure to formaldehyde.

The administration of a medical questionnaire is designed to elicit information on work history, smoking history, any evidence of eye, nose, throat irritation; chronic airway problems or hyperreactive airway disease; allergic skin conditions or dermatitis; and upper or lower respiratory problems.

A determination by the physician, based on the evaluation of the medical disease questionnaire, of whether a medical examination is necessary for employees required to wear respirators to reduce exposure to formaldehyde.

MEDICAL EXAMINATIONS

Medical examinations shall be given to any employee who the physician feels, based on information in the medical disease questionnaire, may be at increased risk from exposure to formaldehyde and at the time of initial assignment and at least annually thereafter to all employees required to wear a respirator to reduce exposure to formaldehyde. The medical examination shall include:

- (a) A physical examination with emphasis on evidence of irritation or sensitization of the skin and respiratory system, shortness of breath, or irritation of the eyes.
- (b) Laboratory examinations for respirator wearers consisting of baseline and annual pulmonary function tests. As a minimum, these tests shall consist of forced vital capacity (FVC), forced expiratory volume in one second (FEV1), and forced expiratory flow (FEF).
- (c) Any other tests which the examining physician deems necessary to complete the written opinion.
- (d) Counseling of employees having medical conditions that would be directly or indirectly aggravated by exposure to formaldehyde.
- (e) The employer shall make medical examinations available as soon as possible to all employees who have been exposed to formaldehyde in an emergency.
- (f) The examinations shall include a medical and work history with emphasis on any evidence of upper or lower respiratory problems, allergic conditions, skin reaction or hypersensitivity, and any evidence of eye, nose, or throat irritation.
- (g) Other examinations shall consist of those elements considered appropriate by the examining physician.
- (h) The employer shall provide to the physician a copy of this standard, a description of the employee's job tasks and representative exposure levels for the employee's job assignment and any other pertinent details concerning the employee's exposure to formaldehyde.

PHYSICIAN'S WRITTEN OPINION

For each medical examination required under this standard, the employer shall obtain a written opinion from the examining physician. This written opinion shall contain the results of the medical examination except that it shall not reveal specific findings or diagnoses unrelated to occupational exposure to formaldehyde. The written opinion shall include:

- (a) The physician's opinion as to whether the employee has any medical condition that would place the employee at an increased risk of material impairment of health from exposure to formaldehyde.
- (b) Any recommended limitations on the employee's exposure or changes in the use of personal protective equipment, including respirators;
- (c) A statement that the employee has been informed by the physician of any medical conditions which may be aggravated by exposure to formaldehyde, whether these conditions may have resulted from past formaldehyde exposure or from exposure in an emergency, and whether there is a need for further examination or treatment.

CWU will retain all records of the results of the medical examination and tests conducted by the physician and a copy of the physician's written opinion will be provided to the affected employee within 15 days of its receipt.

MEDICAL REMOVAL

The provisions of this subdivision apply when an employee reports significant irritation of the mucosa of the eyes or of the upper airways, respiratory sensitization, dermal irritation, or dermal densitization attributed to workplace formaldehyde exposure. Medical removal provisions do not apply in case of dermal irritation or dermal sensitization when the product suspected of causing the dermal condition contains less than 0.05% formaldehyde.

An employee's report of signs or symptoms of possible overexposure to formaldehyde shall be evaluated by a physician selected by CWU. If the physician determines that a medical examination is not necessary, there shall be a two-week evaluation and remediation period to permit the employer to ascertain whether the signs or symptoms subside untreated or with the use of creams, gloves, first aid treatment, or personal protective equipment. Industrial hygiene measures that limit the employee's exposure to formaldehyde may also be implemented during this period. The employee shall be referred immediately to a physician prior to expiration of the two-week period if the signs or symptoms worsen. Earnings, seniority, and benefits may not be altered during the two-week period by virtue of the report.

If the signs or symptoms have not subsided or been remedied by the end of the two-week period, or earlier if signs or symptoms warrant, the employee shall be examined by a physician selected by CWU. The physician shall presume, absent contrary evidence, that

observed dermal irritation or dermal sensitization is not attributable to formaldehyde when products to which the affected employee is exposed contain less than 0.1% formaldehyde.

Medical examinations shall be conducted in compliance with the guidelines contained in WAC 296-62-07546.

If the physician finds that significant irritation of the mucosa of the eyes or the upper airways, respiratory sensitization, dermal irritation, or dermal sensitization results from workplace formaldehyde exposure and recommends restrictions or removal, the employer shall promptly comply.

When an employee is removed, CWU shall transfer the employee to comparable work for which the employee is qualified or can be trained in a short period (up to 6 months), where the formaldehyde exposures are as low as possible, but not higher than the action level. CWU shall maintain the employee's current earnings, seniority, and other benefits. If there is no such work available, CWU will maintain the employee's current earnings, seniority, and other benefits until such work becomes available, until the employee is determined to be unable to return to the workplace, until the employee is determined to be able to return to the original job status, or for 6 months, whichever comes first.

CWU will arrange a follow-up medical examination to take place within 6 months after the employee is removed. This examination shall determine if the employee can return to the original job status, or if the removal is to be permanent. The physician shall make a decision within 6 months of the date the employee was removed as to whether the employee can be returned to the original job status, or if the removal is to be permanent.

CWU's obligation to provide earnings, seniority, and other benefits to a removed employee may be reduced to the extent that the employee receives compensation for earnings lost during the period of removal either from a publicly or employer-funded compensation program or from employment with another employer made possible by virtue of the employee's removal.

MULTIPLE PHYSICIAN REVIEW

After CWU selects the initial physician who conducts any medical examination or consultation to determine whether medical removal or restriction is appropriate, the employee may designate a second physician to review findings, determinations, or recommendations of the initial physician and to conduct such examinations, consultations, and laboratory tests as the second physician deems necessary and appropriate to evaluate the effects of the formaldehyde exposure and to facilitate this review.

CWU will promptly notify the employee of the right to seek a second opinion after each occasion that an initial physician conducts a medical examination or consultation for the purpose of medical removal or restriction.

CWU may condition its participation in, and payment for, the multiple physician review mechanism upon the employee doing the following within 15 days after receipt of the notification of the right to seek a second medical opinion, or receipt of the initial physician's written opinion, whichever is later:

- (a) The employee informs the employer of the intention to seek a medical opinion; and
- (b) The employee initiates steps to make an appointment with the second physician.

If the findings, determinations, or recommendations of the second physician differ from those of the initial physician, then CWU and the employee shall assure that efforts are made for the two physicians to resolve their disagreement. If the two physicians are unable to quickly resolve their disagreement, then the employer and the employee through their respective physicians shall designate a third physician who shall be a specialist in the field at issue:

- (a) To review the findings, determinations, or recommendations of the prior physicians.

HAZARD COMMUNICATION

Hazards of formaldehyde exposure, particularly cancer, irritation and sensitization of the skin and respiratory system, eye and throat irritation, and acute toxicity will be addressed.

Hazard warning labels will comply with requirements of WAC 296-62-05411.

All materials capable of releasing formaldehyde at levels of 0.1PPM to 0.5 PPM, shall have labels that identify the product contains formaldehyde: List the name and address of the responsible party; and state that physical and health hazard information is readily available from CWU and from material safety data sheets.

For materials capable of releasing formaldehyde at levels above 0.5 PPM, labels shall appropriately address all the hazards, including respiratory sensitization, and shall contain the words "Potential Cancer Hazard".

WRITTEN HAZARD COMMUNICATION PROGRAM

CWU will develop, implement, and maintain at the workplace, a written hazard communication program for formaldehyde exposures in the workplace, which at a minimum describes the requirements for labels and other forms of warnings, material safety data sheets, and employee information and training.

All employees who are assigned to workplaces where there is a health hazard from formaldehyde will participate in a training program, except where it can be shown, using objective data, that employees are not exposed to formaldehyde at or below 0.1 PPM.

Training will be provided at the time of initial assignment and whenever a new exposure to formaldehyde is introduced to the work area. The training shall be repeated at least annually.

The training shall be conducted in a manner, which the employee is able to understand, and shall include:

- (a) A discussion of the contents of this regulation and the contents of the material safety data sheets;
- (b) The purpose for and a description of the medical surveillance program required by the standard, including:
 - (1) A description of the potential health hazards associated with exposure to formaldehyde and a description of the signs and symptoms of formaldehyde exposure.
 - (2) Instructions to immediately report to the employer the development of any adverse signs or symptoms that the employee suspects are attributable to formaldehyde exposure.
- (c) Description of operations in the work area where formaldehyde is present and an explanation of the safe work practices appropriate for limiting exposure to formaldehyde in each job;
- (d) The purpose for, proper use of, and limitations of personal protective clothing and equipment;
- (e) Instructions for the handling of spills, emergencies, and clean-up procedures;
- (f) An explanation of the importance of engineering and work practice controls for employee protection and any necessary instruction in the use of these controls; and
- (g) A review of emergency procedures including the specific duties or assignments of each employee in the event of an emergency.

ACCESS TO TRAINING MATERIALS

All affected employees will be informed of the location of written training materials and these materials will be readily available, without cost, to the affected employees.

EXPOSURE MEASUREMENTS

CWU will establish and maintain an accurate record of all measurements taken to monitor employee exposure to formaldehyde. This record shall include:

- (a) The date of the measurement;
- (b) The operation being monitored;
- (c) The methods of sampling and analysis and evidence of their accuracy and precision;
- (d) The number, durations, time, and results of samples taken;
- (e) The types of protective devices worn; and
- (f) The names, job classifications, social security numbers, and exposure estimates of the employees whose exposures are represented by the actual monitoring results.
- (g) Exposure determinations. Where the employer has determined that no monitoring is required under this standard, the employer shall maintain a record of the objective data relied upon to support the determination that no employee is exposed to formaldehyde at or above the action level.

MEDICAL SURVEILLANCE

Accurate records will be established and maintained for each employee subject to medical surveillance under this standard. This record shall include:

- (a) The name and social security number of the employee;
- (b) The physician's written opinion;
- (c) A list of any employee health complaints that may be related to exposure to formaldehyde; and
- (d) A copy of the medical examination results, including medical disease questionnaires and results of any medical tests required or mandated by the examining physician.
- (e) Respirator fit testing.

RECORD RETENTION

All records will be retained for at least the following periods:

- (a) Exposure records and determinations shall be kept for at least thirty years.
- (b) Medical records shall be kept for the duration of employment plus thirty years; and
- (c) Respirator fit testing records shall be kept until replaced by a more recent record.

Records shall be made available to the employee upon request.