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## Formaldehyde

### Chapter 296-856, WAC

Effective Date: 09/01/06

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## WAC 296-856-200

### Basic Rules

#### Summary

### YOUR RESPONSIBILITY

#### To measure and minimize employee exposure to formaldehyde

#### IMPORTANT:

The requirements in basic rules apply to all employers covered by the scope of this chapter. Additional sections may apply to you. Turn to the scope and follow [Table 1](#) in that section to determine the additional sections of this chapter that apply to you.

Preventive practices	<a href="#">WAC 296-856-20010</a>
Training	<a href="#">WAC 296-856-20020</a>
Personal protective equipment (PPE)	<a href="#">WAC 296-856-20030</a>
Employee protective measures	<a href="#">WAC 296-856-20040</a>
Exposure evaluations	<a href="#">WAC 296-856-20050</a>
Notification	<a href="#">WAC 296-856-20060</a>
Exposure records	<a href="#">WAC 296-856-20070</a>

Rules

## WAC 296-856-20010

## Preventive practices

### You must

Make sure containers of gasses, solutions, or materials composed of greater than 0.1 percent formaldehyde, **and** capable of releasing formaldehyde at concentrations greater than 0.1 ppm to 0.5 ppm, are properly labeled, tagged, or marked with all of the following:

- That the product contains formaldehyde.
- The name and address of the responsible party (for example manufacturer, importer, or employer).
- A statement that the physical and health hazard information can be obtained from you, and from the material safety data sheet (MSDS).

Label, tag, or mark containers and materials capable of releasing formaldehyde at levels above 0.5 ppm as follows:

- Include the words on the label “Potential Cancer Hazard.”
- Follow the requirements for labels found in the following separate chapters:

The Safety and Health Core Rules, Employer chemical hazard communications, [WAC 296-800-170](#)

Material Safety Data Sheet and Label Preparation, [chapter 296-839 WAC](#)

### You must

Make sure you have a housekeeping and maintenance program to detect leaks and spills by doing at least the following:

- Regular visual inspections.
- Preventive maintenance of equipment, that includes surveys for leaks, at regular intervals.
- In areas where spills could occur, make resources available to contain the spills, decontaminate the area affected, and dispose of waste.
- Promptly repair leaks and clean up spills.
- Train employees who will clean spills and repair leaks, about the methods for cleanup and decontamination.
- Make sure employees who will clean up spills and repair leaks, have the appropriate personal protective equipment and respirators.

- Dispose of waste from spills or leaks in sealed containers marked with information that states the contents contain formaldehyde and the hazards associated with formaldehyde exposure.
- Develop and implement appropriate procedures to minimize injury and loss of life if there is a possibility of an emergency, such as an uncontrolled release of formaldehyde.

**Note:**

Following the requirements of a separate chapter, Emergency Response, [chapter 296-824 WAC](#), will meet the requirements for emergency procedures.

Provide emergency washing facilities, for formaldehyde exposures, as required by a separate chapter, the Safety and Health Core Rules, First aid, [WAC 296-800-150](#), as follows:

- Emergency showers in the immediate work areas where skin contact to solutions of 1 percent or greater of formaldehyde could occur.
- Emergency eye wash in the immediate work area where an eye contact to solutions of 0.1 percent or greater of formaldehyde could occur.

**Reference:**

For additional requirements about spills leaks, or releases, go to [Emergency Response, Chapter 296-824 WAC](#), a separate chapter.

WAC 296-856-20020

## Training

**Exemption:**

Training isn't required for employees when you have conclusive documentation that they can't be exposed to formaldehyde at airborne concentrations above 0.1 parts per million (ppm).

**You must**

Provide training and information to employees exposed to formaldehyde at all of the following times:

- At the time of initial assignment to a work area where there is formaldehyde exposure.
- Whenever there is a new exposure to formaldehyde in their work area.
- At least every 12 months after initial training.

Make sure training includes at least the following:

- The contents of this chapter and MSDS for formaldehyde.
- The purpose of medical evaluations and a description of how you are fulfilling the medical evaluation requirements of this chapter.
- The health hazards and signs and symptoms associated with formaldehyde exposure, including:
  - Cancer hazard
  - Skin and respiratory system irritant and sensitizer
  - Eye and throat irritation
  - Acute toxicity
- How employees will immediately report any signs or symptoms suspected to be from formaldehyde exposure.
- Descriptions of operations where formaldehyde is present.
- Explanations of safe work practices to limit employee exposure to formaldehyde for each job.
- The purpose, proper use, and limitations of personal protective clothing.
- Instructions for the handling of spills, emergencies, and clean-up procedures.
- An explanation of the importance of exposure controls, and instructions in the use of them.
- A review of emergency procedures, including the specific duties or assignments of each employee in the event of an emergency.
- The purpose, proper use, limitations, and other training requirements for respiratory protection, as required by a separate chapter, Respirators, [Chapter 296-842 WAC](#).

Make sure any written training materials are readily available to your employees at no cost.



### Reference:

For additional training and information requirements that may apply to your work activities, go to Respirators, [Chapter 296-842 WAC](#), a separate chapter.

For a list of hazard communication training topics, go to the Safety and Health Core Rules, *Inform and Train Your Employees about Hazardous Chemicals in Your Workplace*, [WAC 296-800-17030](#), a separate chapter.



### Helpful Tool:

For additional training information, see the [Substance Technical Guideline for Formaldehyde](#), [Medical Surveillance](#), and the [Medical Disease Questionnaire](#) found in the [Resources section](#) of this chapter.

## Personal protective equipment (PPE)

### You must

Provide PPE at no cost to employees and make sure employees wear the equipment.

Make sure that employees don't take contaminated clothing or other PPE from the workplace.

Select PPE that's appropriate for your workplace based on at least the following:

- The form of formaldehyde, such as gas, solution, or material.
- The conditions of use.
- The hazard to be prevented.

Provide full body protection for entry into areas where formaldehyde exposure could exceed 100 parts per million (ppm) or when airborne concentrations are unknown.

Protect employees from all contact with liquids containing one percent or more of formaldehyde by providing chemical protective clothing that's impervious to formaldehyde and other personal protective equipment, such as goggles and face shields, as appropriate for the operation.

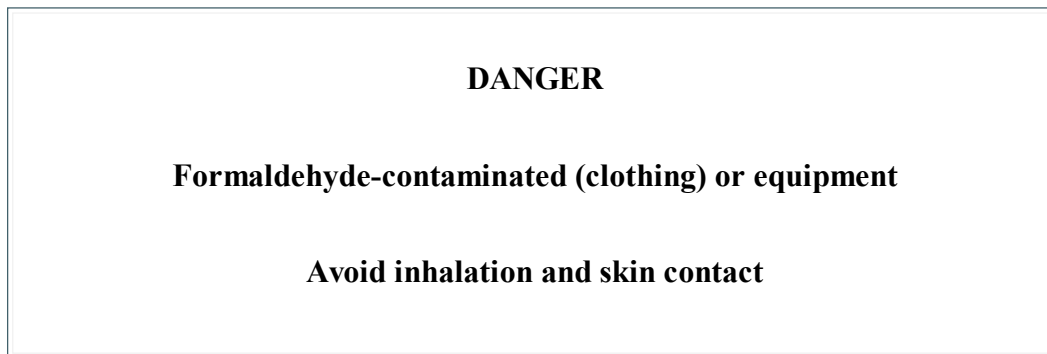
Make sure when face shields are worn, employees also wear chemical safety goggles if there could be eye contact with formaldehyde.

Make sure contaminated clothing and other PPE is cleaned or laundered before it's used again.

Repair or replace clothing and other PPE as needed to maintain effectiveness.

Make sure storage areas for ventilating contaminated clothing and PPE are established to minimize employee exposure to formaldehyde.

Make sure storage areas and containers for contaminated clothing and PPE have labels or signs with the following warning:



Make sure that only employees trained to recognize the hazards of formaldehyde remove personal protective equipment (PPE) and clothing from storage areas for the purposes of disposal, cleaning, or laundering.

Inform any person who launders, cleans, or repairs contaminated clothing or other PPE, of the hazards of formaldehyde and procedures to safely handle the clothing and equipment.

Provide change rooms for employees who are required to change from work clothes into protective clothing to protect them from skin contact with formaldehyde.

Make sure change rooms have separate storage facilities for street clothes and protective clothing.



## Reference:

- For additional PPE requirements, go to the Safety and Health Core Rules, Personal Protective Equipment (PPE), [WAC 296-800-160](#), a separate chapter.
- For additional requirements pertaining to change rooms, go to Hazardous Waste, *Provide Showers and Changing Rooms*, [WAC 296-843-15010](#), a separate chapter.
- For additional information regarding respirators, go to Respirators, [Chapter 296-842 WAC](#), a separate chapter.

**WAC 296-856-20040**

## Employee protective measures

### You must

Implement appropriate protective measures while you conduct your exposure evaluation.

- Employees performing activities with exposure to airborne formaldehyde that could exceed the 0.75 ppm, 8-hour time weighted average (TWA8), or the 2 ppm 15-minute short-term exposure limit (STEL), need to follow the requirements in [WAC 296-856-30010](#) through [296-856-40030](#) of this chapter.



## Reference:

For respirator requirements, turn to Respirators, [WAC 296-856-40030](#).

**WAC 296-856-20050**

## Exposure Evaluations

### Important:

This section applies when there is a potential for an employee to be exposed to airborne formaldehyde in your workplace.

When you conduct an exposure evaluation in a workplace where an employee uses a respirator, the protection provided by the respirator isn't considered.

Following this section will fulfill the requirements to identify and evaluate respiratory hazards found in a separate chapter, *Respiratory Hazards*, [Chapter 296-841 WAC](#).

### You must

Conduct an employee exposure evaluation to accurately determine airborne concentrations of formaldehyde by completing [Steps 1 through 7](#) of the exposure evaluation process, each time any of the following apply:

- No evaluation has been conducted.
- Changes have occurred in any of the following areas that may result in new or increased employee exposures:

- Production
- Processes
- Exposure controls, such as ventilation systems or work practices
- Personnel
- Equipment

- You have any reason to suspect new or increased employee exposure may occur.

- You receive a report of employee developing signs and symptoms associated with formaldehyde exposure.

Provide affected employees or their designated representatives an opportunity to observe exposure monitoring required by this chapter.

Make sure observers entering areas with formaldehyde exposure:

- Are provided with and use the same protective clothing, respirators, and other personal protective equipment (PPE) that employees working in the area are required to use

**and**

- Follow any safety and health requirements that apply.

## Exposure Evaluation Process:



### Exemption:

- Exposure monitoring isn't necessary if you have documentation conclusively demonstrating that employee exposure for a particular material and the operation where it's used, can't exceed the action level ( AL) or short-term exposure limit (STEL) during any conditions reasonably anticipated.
- Such documentation can be based on observations, data, calculations, and previous air monitoring results. Previous air monitoring results:
  - Must meet the accuracy required by [Step 5](#).
  - Must be based on data that represents conditions being evaluated in your workplace.
  - May be from outside sources, such as industry or labor studies.

**Step 1:** Identify all employees who have potential exposure to airborne formaldehyde in your workplace.

**Step 2:** Identify operations where employee exposures could exceed the 15-minute short-term exposure limit (STEL) for formaldehyde of 2 parts per million (ppm).



### Note:



You may use monitoring devices such as colorimetric indicator tubes or real-time monitors to screen for activities where employee exposures could exceed the STEL.

**Step 3:** Select employees from those working in the operations you identified in [Step 2](#) who will have their 15-minute exposures monitored.

**Step 4:** Select employees from those identified in [Step 1](#) who will have their 8-hour exposures monitored.

- Make sure the exposures of the employees selected represent 8-hour exposures for all employees identified in [Step 1](#), including each job activity, work area, and shift.

If you expect exposures to be **below** the action level (AL), you may limit your selection to those employees reasonably believed to have the highest exposures.

If you find any of those employees' exposure to be **above** the AL, then you need to repeat monitoring to include each job activity, work area, and shift.



#### Reference:

A written description of the procedure used for obtaining representative employee exposure monitoring results needs to be kept as part of your exposure records, as required by *Exposure Records*, [WAC 296-856-20070](#).

- This description can be created while completing [Steps 3 through 6](#) of this exposure evaluation process.

**Step 5:** Determine how you will obtain accurate employee exposure monitoring results. Select and use an air monitoring method with a confidence level of 95 percent, that's accurate to:

-  $\pm 25$  percent when concentrations are potentially above the TWA of 0.75 parts per million (ppm).

-  $\pm 25$  percent when concentrations are potentially above the STEL of 2 ppm.

-  $\pm 35$  percent when concentrations are potentially above the AL.



#### Note:

Here are examples of air monitoring methods that meet this accuracy requirement:

- OSHA Method 52 found at <http://www.osha.gov/dts/sltc/methods/toc.html>.

- NIOSH methods: 2016, 2514, 3500, 2539, and 5700, found at <http://www.cdc.gov/niosh>

[/homepage.html](#) and linking to the NIOSH Manual of Analytical Methods.

- Direct reading methods found at <http://www.osha.gov/SLTC/formaldehyde/index.html>

**Step 6:** Obtain employee exposure monitoring results by collecting air samples to accurately determine the formaldehyde exposure of employees identified in [Steps 3 and 4](#).

- Make sure samples are collected from each selected employee's breathing zone.



**Note:**

- You may use any sampling method that meets the accuracy specified in Step 5. Examples of these methods include:
  - Real-time monitors that provide immediate exposure monitoring results.
  - Equipment that collects samples that are sent to a laboratory for analysis.
- The following are examples of methods for collecting samples representative of 8-hour exposures.
  - Collect one or more continuous samples, such as a single 8-hour sample or four 2-hour samples.
  - Take a minimum of 5 brief samples, such as five 15-minute samples, during the work shift at randomly selected times.

For work shifts longer than 8 hours, monitor the continuous 8-hour portion of the shift expected to have the highest average exposure concentration.

**Step 7:** Have the samples you collected analyzed to obtain employee exposure monitoring results for 8-hour and short-term exposure limits (STEL) exposures.

- Determine if employee exposure monitoring results are above or below the following values:

- 8-hour action level (AL) of 0.5 ppm.
- 8-hour time-weighted average (TWA<sub>8</sub>) of 0.75 ppm.
- 15-minute short-term exposure limit (STEL) of 2 ppm.



**Reference:**

- To use the monitoring results to determine which additional chapter sections apply to employee exposure in your workplace, turn to the Scope, [WAC](#)

[296-856-100](#), and follow [Table 1](#) in that section.

**Note:**

- You may contact your local WISHA consultant for help with:
  - Interpreting data or other information.
  - Determining 8-hour employee exposure monitoring results.
- To contact a WISHA consultant:
  - Go to the *Safety and Health Core Rules*, [Chapter 296-800 WAC](#)  
**and**
  - Find the Resources section, and under "other resources," find service locations for Labor & Industries.

**WAC 296-856-20060**

## Notification

### You must

Provide written notification of exposure monitoring results to employees represented by your exposure evaluation, within 5 business days after the results become known to you.

- In addition, when employee exposure monitoring results are above the permissible exposure limits (PEL), of either the 8-hour time weighted average (TWA<sub>8</sub>) or the 15-minute short-term exposure limit (STEL), provide written notification of both of the following within 15 business days after the results become known to you:
  - Corrective actions being taken and a schedule for completion.
  - Any reason why exposures can't be lowered to below the PEL.

**Note:**

- You can notify employees either individually or post the notifications in areas readily accessible to affected employees.
- Posted notification may need specific information that allows affected employees to determine which monitoring results apply to them.
- Notification may be:
  - In any written form, such as handwritten or e-mail.
  - Limited to the required information, such as exposure monitoring results.
- When notifying employees about corrective actions, your notification may refer them to a separate document that's available and provides the required information.

WAC 296-856-20070

## Exposure records

### You must

Establish and keep complete and accurate records for all exposure monitoring conducted under this chapter. Make sure the record includes at least the following:

- The name, unique identifier, and job classification of both:

The employee sampled

**and**

All other employees represented by the sampled employee.

- An estimate of the exposure for each employee “represented” by this monitoring.
- A description of the methods used to obtain exposure monitoring results and evidence of the method’s accuracy.
- Any environmental conditions that could affect exposure concentration measurements.
- A description of the procedure used to obtain representative employee exposure monitoring results.
- The operation being monitored.
- The date, number, duration, location, and the result of each sample taken.
- The type of protective devices worn.

Maintain documentation that conclusively demonstrates that employee exposure for formaldehyde and the operation where it’s used can’t exceed the action level or the 15-minute short-term exposure limit, during any reasonable anticipated conditions.

- Such documentation can be based on observations, data, calculation, and previous air monitoring results.

Keep exposure monitoring records for at least 30 years.



### Reference:

For additional requirements that apply to employee exposure records, including access and transfer requirements, go to Employee Medical and Exposure Records, [Chapter 296-802 WAC](#), a separate chapter.