

WAC 296-855-20050 Exposure evaluations.

IMPORTANT:

This section applies when there is a potential for airborne exposure to ethylene oxide (EtO) in your workplace.

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

Following this section will also meet the requirements to identify and evaluate respiratory hazards found in chapter 296-841 WAC, Airborne contaminants.

(1) You must conduct an employee exposure evaluation to accurately determine airborne concentrations of EtO by completing Steps one through seven of the exposure evaluation process, each time any of the following apply:

(a) No evaluation has been conducted.

(b) Changes have occurred in any of the following areas that may result in new or increased employee exposures:

(i) Production.

(ii) Processes.

(iii) Personnel.

(iv) Exposure controls such as ventilation systems or work practices.

(c) You have any reason to suspect new or increased employee exposure may occur.

(2) You must provide affected employees and their designated representatives an opportunity to observe any exposure monitoring during Step six of the exposure evaluation process.

(3) You must make sure observers entering areas with EtO exposure:

(a) 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

(b) Follow all safety and health requirements that apply.

Exposure evaluation process

Step one: Identify all employees who have potential exposure to airborne ethylene oxide (EtO) in your workplace.

Step two: Identify operations where employee exposures could exceed EtO's fifteen-minute short-term exposure limit (STEL) of five parts per million (ppm).

Step three: Select employees from those working in the operations you identified in Step two who will have their STEL exposures measured.

Step four: Select employees from those identified in Step one who will have their eight-hour exposures monitored.

- Make sure the exposures of the employees selected represent eight-hour exposures for all employees identified in Step one including each job classification, work area, and shift.
- If you expect all employee exposures to be below the action level (AL), you can choose to limit your selection to those employees reasonably believed to have the highest exposures. If you find these employees' exposure to be above the AL, then you'll need to repeat Step four to represent all employees identified in Step one.

Note: You can use Steps three through six of this process to create a written description of the procedure used for obtaining representative employee exposure monitoring results, which is a requirement in Exposure records, WAC 296-855-20070.

Exemption:

1. You can skip Steps four through seven if you have documentation conclusively demonstrating that employee exposure for a particular material and the operation where it's used, cannot exceed the AL or STEL during any conditions reasonably anticipated.
2. Such documentation can be based on observations, data, calculations, and previous air monitoring results. Previous air monitoring results:
 - a. Must meet the accuracy required by Step five.
 - b. May be from outside sources, such as industry or labor studies.
 - c. Must be based on data that represents conditions being evaluated in your workplace.

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

- \pm twenty-five percent when concentrations are potentially above the AL or eight-hour time-weighted average of one part per million (ppm).
- \pm thirty-five percent when concentrations are potentially above the AL of 0.5 ppm or the STEL of five ppm.

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

1. OSHA Method thirty found by going to: <http://www.osha.gov/dts/sltc/methods/toc.html>.
2. NIOSH Method thirty eight hundred found by going to: <http://www.cdc.gov/niosh/homepage.html> and linking to the NIOSH Manual of analytical methods.

Step six: Obtain employee monitoring results by collecting air samples representing employees identified in Steps three and four.

- Collect STEL samples for employees and operations selected in Step three.
- Collect samples representing the eight-hour exposure, for at least one shift, for each employee selected in Step four.
- Make sure samples are collected from each selected employee's breathing zone.

Note:

1. You may use any sampling method that meets the accuracy specified in Step five. Examples of these methods include:
 - a. Real-time monitors that provide immediate exposure monitoring results.
 - b. Equipment that collects samples that are sent to a laboratory for analysis.
2. The following are examples of methods for collecting samples representative of eight-hour exposures:
 - a. Collect one or more continuous samples, such as a single eight-hour sample or four two-hour samples.
 - b. Take a minimum of five brief samples, such as five fifteen-minute samples, during a work shift at randomly selected times.
3. For work shifts longer than eight hours, monitor the continuous eight-hour portion of the shift expected to have the highest average exposure concentration.

Step seven: Have the samples you collected analyzed to obtain monitoring results for eight-hour and STEL exposures.

- Determine if employee exposure monitoring results are above or below the following values:
 - Eight-hour time-weighted average (TWA₈) of one ppm.
 - Fifteen-minute short-term exposure limit (STEL) of five ppm.
 - Eight-hour action level (AL) of 0.5 ppm.

Note: You may contact your local WISHA consultant for help:

1. Interpreting data or other information.
2. Determining eight-hour or fifteen-minute employee exposure monitoring results.

[Statutory Authority: RCW 49.17.010, 49.17.040, 49.17.050, and 49.17.060. WSR 18-22-116, § 296-855-20050, filed 11/6/18, effective 12/7/18; WSR 07-06-005, § 296-855-20050, filed 2/22/07, effective 4/1/07; WSR 05-17-168, § 296-855-20050, filed 8/23/05, effective 1/1/06.]