



Oregon Administrative Rules  
Chapter 437

Division 2

General Occupational Safety and Health

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Beryllium

Subdivision

**Z**

Administrative  
Order 1-2018



The Oregon Department of Consumer and Business Services adopted these rules pursuant to ORS 654.025(2).

The Secretary of State designated OAR Chapter 437 as the "Oregon Occupational Safety and Health Code." Six general subject areas within this code are designated as "Divisions."

- **Division 1** General Administrative Rules
- **Division 2** General Occupational Safety and Health Rules
- **Division 3** Construction
- **Division 4** Agriculture
- **Division 5** Maritime Activities
- **Division 7** Forest Activities
- **Oregon Revised Statutes (ORS) 654** The Oregon Safe Employment Act (OSEAct)

Oregon-initiated rules in this division of the Oregon Occupational Safety and Health Code are numbered in a uniform system developed by the Secretary of State. This system does not number the rules in sequence (001, 002, 003, etc.). Omitted numbers may be assigned to new rules at the time of their adoption.

**Oregon-initiated rules** are arranged in the following Basic Codification Structure adopted by the Secretary of State for Oregon Administrative Rules (OAR):

Chapter	Division	Rule	Section	Subsection	Paragraphs
<i>437</i>	<i>002</i>	<i>0322</i>	<i>(1)</i>	<i>(a)</i>	<i>(A)(i)(I)</i>

The majority of Oregon OSHA rules are adopted by reference from the Code of Federal Regulations (CFR), and are arranged in the following basic federal numbering system:

Chapter	Division	Part	Subpart (Subdivision)	Section	Paragraphs
437	002	1910	G	.303	(a)(1)(i)(A)(1)

The terms "subdivision" and "subpart" are synonymous within OAR 437, Oregon Occupational Safety and Health Code.

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To obtain an order form or copies of these codes, address:

**Department of Consumer & Business Services**  
**Oregon Occupational Safety & Health Division (Oregon OSHA)**  
**350 Winter St. NE**  
**Salem, OR 97301-3882**

Or call the Oregon OSHA Resource Library at 503-378-3272

The rules referenced in this division are available for viewing in the Office of the Secretary of State, Oregon State Archives Building, Salem, Oregon, or the Central Office, Oregon Occupational Safety and Health Division of the Department of Consumer and Business Services, 350 Winter St. NE, Salem, Oregon, and on our web site at [osha.oregon.gov](http://osha.oregon.gov).

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## 437-002-2024 Scope and application

This subdivision applies to all occupational exposures to beryllium in all forms, compounds, and mixtures in general industry and construction activities, except for the following:

- (1) This subdivision does not apply to articles, as defined in the Hazard Communication standard (HCS) §1910.1200(c), that contain beryllium and that the employer does not process.
- (2) This subdivision does not apply to materials containing less than 0.1% beryllium by weight where the employer has objective data demonstrating that employee exposure to beryllium will remain below the action level as an 8-hour TWA under any foreseeable conditions.

Stat. Auth.: ORS 654.025(2) and 656.726(4).  
Stats. Implemented: ORS 654.001 through 654.295.  
Hist: OR-OSHA Admin. Order 3-2017, f. 07/07/17, ef. 03/12/18.  
OR-OSHA Admin. Order 1-2018, f. 03/12/18, ef. 03/12/18.

## 437-002-2025 Definitions

For the purposes of this subdivision the following definitions apply:

**Action level** means a concentration of airborne beryllium of 0.1 micrograms per cubic meter of air ( $\mu\text{g}/\text{m}^3$ ), calculated as an 8-hour TWA.

**Airborne exposure and airborne exposure to beryllium** mean the exposure to airborne beryllium that would occur if the employee were not using a respirator.

**Beryllium lymphocyte proliferation test (BeLPT)** means the measurement of blood lymphocyte proliferation in a laboratory test when lymphocytes are challenged with a soluble beryllium salt.

**Beryllium work area** means any work area containing a process or operation that can release beryllium where employees are, or can reasonably be expected to be, exposed to airborne beryllium at any level or where there is the potential for dermal contact with beryllium.

**CBD diagnostic center** means a medical diagnostic center that has an on-site pulmonary specialist and on-site facilities to perform a clinical evaluation for the presence of chronic beryllium disease (CBD). This evaluation must include pulmonary function testing (as outlined by the American Thoracic Society criteria), bronchoalveolar lavage (BAL), and transbronchial biopsy. The CBD diagnostic center must also have the capacity to transfer BAL samples to a laboratory for appropriate diagnostic testing within 24 hours. The on-site pulmonary specialist must be able to interpret the biopsy pathology and the BAL diagnostic test results.

**Chronic beryllium disease (CBD)** means a chronic lung disease associated with airborne exposure to beryllium.

**Competent person** means an individual who is capable of identifying existing and foreseeable beryllium hazards in the workplace and who has authorization to take prompt corrective measures to eliminate or minimize them. The competent person must have the knowledge and ability necessary to fulfill the responsibilities set forth in this subdivision.

**Confirmed positive** means the person tested has beryllium sensitization, as indicated by two abnormal BeLPT test results, an abnormal and a borderline test result, or three borderline test results. It also means the result of a more reliable and accurate test indicating a person has been identified as having beryllium sensitization.

**Emergency** means any uncontrolled release of airborne beryllium.

**High-efficiency particulate air (HEPA) filter** means a filter that is at least 99.97 percent efficient in removing particles of 0.3 micrometers in diameter.

**Objective data** means information, such as air monitoring data from industry-wide surveys or calculations based on the composition of a substance, demonstrating employee exposure to beryllium associated with a particular product or material or a specific process, task, or activity. The data must reflect workplace conditions closely resembling or with a higher exposure potential than the processes, types of material, control methods, work practices, and environmental conditions in the employer's current operations.

**Permissible exposure limit (PEL)** means a concentration of airborne beryllium of 0.2  $\mu\text{g}/\text{m}^3$ , calculated as an 8-hour TWA.

**Physician or other licensed health care professional [PLHCP]** means an individual whose legally permitted scope of practice (i.e., license, registration, or certification) allows him or her to independently provide or be delegated the responsibility to provide some or all of the particular health care services required by 437-002-2034.

**Regulated area** means an area, including temporary work areas where maintenance or non-routine tasks are performed, where an employee's airborne exposure exceeds, or can reasonably be expected to exceed, either the time-weighted average (TWA) permissible exposure limit (PEL) or short term exposure limit (STEL).

Stat. Auth.: ORS 654.025(2) and 656.726(4).  
Stats. Implemented: ORS 654.001 through 654.295.  
Hist: OR-OSHA Admin. Order 3-2017, f. 07/07/17, ef. 03/12/18.  
OR-OSHA Admin. Order 4-2017, f. 07/31/17, ef. 03/12/18.

### **437-002-2026 Permissible exposure limit (PEL)**

- (1) Time-weighted average (TWA) PEL. The employer must ensure that no employee is exposed to an airborne concentration of beryllium in excess of 0.2 µg/m<sup>3</sup> calculated as an 8-hour TWA.
- (2) Short-term exposure limit (STEL). The employer must ensure that no employee is exposed to an airborne concentration of beryllium in excess of 2.0 µg/m<sup>3</sup> as determined over a sampling period of 15 minutes.

Stat. Auth.: ORS 654.025(2) and 656.726(4).  
Stats. Implemented: ORS 654.001 through 654.295.  
Hist: OR-OSHA Admin. Order 3-2017, f. 07/07/17, ef. 03/12/18.

### **437-002-2040 Exposure assessment**

This rule requires an evaluation of employee exposure to beryllium using air monitoring or objective data as described in the performance or scheduled monitoring options.

- (1) Assess the exposure of each employee who is or may reasonably be expected to be exposed to beryllium in accordance with either the performance option in paragraph (2) or the scheduled monitoring option in paragraph (3).
- (2) Performance option. Assess the 8-hour TWA exposure and 15-minute short-term exposure for each employee on the basis of any combination of air monitoring data or objective data sufficient to accurately characterize employee exposures to beryllium.

(3) Scheduled monitoring option.

- (a) Perform initial monitoring to assess the 8-hour TWA exposure for each employee on the basis of one or more personal breathing zone air samples that reflect the exposures of employees on each shift, for each job classification, in each work area.
- (b) Perform initial monitoring to assess the short-term exposure from 15-minute personal breathing zone air samples measured in operations that are likely to produce airborne exposure above the STEL for each work shift, for each job classification, and in each work area.
- (c) Where several employees perform the same tasks on the same shift and in the same work area, you may sample a representative fraction of these employees in order to meet this requirement. In representative sampling, sample the employee(s) who are expected to have the highest exposure to beryllium.
- (d) If initial monitoring indicates that employee exposures are below the action level and at or below the STEL, you may discontinue monitoring for those employees whose exposures are represented by such monitoring.
- (e) Where the most recent exposure monitoring indicates that employee exposures are at or above the action level but at or below the PEL, repeat such monitoring within six months of the most recent monitoring.
- (f) Where the most recent exposure monitoring indicates that employee exposures are above the PEL, repeat such monitoring within three months of the most recent monitoring.
- (g) Where the most recent (non-initial) exposure monitoring indicates that employee exposures are below the action level, repeat such monitoring within six months of the most recent monitoring until two consecutive measurements, taken 7 or more days apart, are below the action level, at which time you may discontinue monitoring for those employees whose exposures are represented by such monitoring, except as otherwise provided in paragraph (4).
- (h) Where the most recent exposure monitoring indicates that airborne exposure is above the STEL, repeat such monitoring within three months of the most recent short-term exposure monitoring until two consecutive measurements, taken 7 or more days apart, are below the STEL, at which time you may discontinue short-term exposure monitoring for those employees whose exposure is represented by such monitoring, except as otherwise provided in paragraph (4).



- (4) Reassess exposures whenever a change in the production, process, control equipment, personnel, or work practices may reasonably be expected to result in new or additional exposures at or above the action level or STEL, or when there is any reason to believe that new or additional exposures at or above the action level or STEL have occurred.
- (5) Ensure that all air monitoring samples used to satisfy the monitoring requirements of this rule are evaluated by a laboratory that can measure beryllium to an accuracy of plus or minus 25 percent within a statistical confidence level of 95 percent for airborne concentrations at or above the action level.
- (6) Employee notification of assessment results.
  - (a) Within 15 working days after completing an exposure assessment in accordance with this rule, notify each employee whose airborne exposure is represented by the assessment of the results of that assessment individually in writing or post the results in an appropriate location that is accessible to each of these employees.
  - (b) Whenever an exposure assessment indicates that employee exposure is above the PEL or STEL, describe in the written notification the corrective action being taken to reduce employee exposure to or below the exposure limit(s) exceeded where feasible corrective action exists but had not been implemented when the monitoring was conducted.
- (7) Observation of monitoring.
  - (a) Where air monitoring is performed to comply with the requirements of this rule, provide affected employees or their designated representatives an opportunity to observe any monitoring of employee exposure to beryllium.
  - (b) When observation of monitoring requires entry into an area where the use of protective clothing or equipment (which may include respirators) is required, provide the observer with protective clothing and equipment at no cost, ensure that the observer uses such clothing and equipment, and ensure that each observer follows all other applicable safety and health procedures.

Stat. Auth.: ORS 654.025(2) and 656.726(4).  
Stats. Implemented: ORS 654.001 through 654.295.  
Hist: OR-OSHA Admin. Order 3-2017, f. 07/07/17, ef. 03/12/18.

## 437-002-2028 Regulated and restricted access areas

This rule applies to fixed site beryllium work areas and regulated areas, and restricted access areas for construction activities.

### (1) Fixed sites.

#### (a) Beryllium work area.

- (A) Establish and maintain a beryllium work area in work area containing a process or operation that can release beryllium where employees are, or can reasonably be expected to be, exposed to airborne beryllium at any level or where there is the potential for dermal contact with beryllium.
- (B) Identify each beryllium work area through signs or any other methods that adequately establish and inform each employee of the boundaries of each beryllium work area.

#### (b) Regulated areas.

- (A) Establish a regulated area wherever an employee's exposure to airborne concentrations of beryllium is, or can reasonably be expected to be, in excess of the PEL.
- (B) Demarcate regulated areas from the rest of the workplace in a manner that minimizes the number of employees exposed to beryllium within the regulated area. Post legible and easily visible signs at all entrances to regulated areas that bear the following legend.

DANGER  
REGULATED AREA  
BERYLLIUM  
MAY CAUSE CANCER  
AUTHORIZED PERSONNEL ONLY  
WEAR RESPIRATORY PROTECTION AND PERSONAL PROTECTIVE  
CLOTHING AND EQUIPMENT IN THIS AREA

#### (C) Limit access to regulated areas to:

- (i) Persons authorized by the employer and required by work duties to be present in the regulated area;
- (ii) Any person entering such an area as a designated representative of employees for the purpose of exercising the right to observe monitoring procedures under 437-002-2040; and

- (iii) Any person authorized by law to be in a regulated area.
- (D) Provide and ensure each employee and the employee's designated representative entering a regulated area uses:
  - (i) Appropriate respiratory protection in accordance with 437-002-2030,
  - (ii) Appropriate personal protective equipment in accordance with 437-002-2045.
- (2) Restricted access for construction activities. For employers engaged in construction activities;
  - (a) Written procedures. Develop and implement written procedures to restrict access to work areas, where airborne exposures are, or can reasonably be expected to be, above the TWA PEL or STEL, to minimize the number of employees exposed to beryllium and their level of exposure, including exposures generated by other employers or sole proprietors. Procedures must be part of the written exposure control plan required by 437-002-2029.
  - (b) Competent person. Designate a competent person to ensure the procedures are followed.

Stat. Auth.: ORS 654.025(2) and 656.726(4).  
Stats. Implemented: ORS 654.001 through 654.295.  
Hist: OR-OSHA Admin. Order 3-2017, f. 07/07/17, ef. 03/12/18.  
OR-OSHA Admin. Order 1-2018, f. 03/12/18, ef. 03/12/18.

## 437-002-2029 Methods of Compliance

This rule describes the engineering and work practice controls you must use.

- (1) Establish and implement a written exposure control plan that contains at least the following elements:
  - (a) A list of operations and job titles reasonably expected to involve airborne exposure to or dermal contact with beryllium;
  - (b) A list of operations and job titles reasonably expected to involve airborne exposure at or above the action level;
  - (c) A list of operations and job titles reasonably expected to involve airborne exposure above the TWA PEL or STEL;
  - (d) Procedures for minimizing cross-contamination;

- (e) A list of engineering controls, work practices, and respiratory protection required by this subdivision;
  - (f) A list of personal protective clothing and equipment required by 437-002-2045 of this subdivision; and
  - (g) Procedures for removing, laundering, storing, cleaning, repairing, and disposing of beryllium-contaminated personal protective clothing and equipment, including respirators.
- (2) On fixed sites, the exposure control plan must also include:
- (a) Procedures for keeping surfaces as free as practicable of beryllium;
  - (b) Procedures for preventing the transfer of beryllium between surfaces, equipment, clothing, materials, and articles within beryllium work areas; and
  - (c) Procedures for minimizing the migration of beryllium from beryllium work areas to other locations within or outside the workplace.
- (3) Review and evaluate the effectiveness of each written exposure control plan at least annually and update it, as necessary, when:
- (a) Any change in production processes, materials, equipment, personnel, work practices, or control methods results, or can reasonably be expected to result, in new or additional airborne exposure to beryllium;
  - (b) You are notified that an employee is eligible for medical removal in accordance with OAR 437-002-2035, referred for evaluation at a CBD diagnostic center, or shows signs or symptoms associated with airborne exposure to or dermal contact with beryllium; or
  - (c) You have any reason to believe that new or additional airborne exposure is occurring or will occur.
- (4) Make a copy of the written exposure control plan accessible to each employee who is, or can reasonably be expected to be, exposed to airborne beryllium in accordance with Oregon OSHA's Access to Employee Exposure and Medical Records (Records Access) rule §1910.1020(e).
- (5) Engineering and work practice controls.
- (a) For each operation in a beryllium work area that releases airborne beryllium, and where exposures are, or can reasonably be expected to be, at or above the action level, ensure that at least one of the following is in place to reduce airborne exposure:

- (A) Material and/or process substitution;
  - (B) Isolation, such as ventilated partial or full enclosures;
  - (C) Local exhaust ventilation, such as at the points of operation, material handling, and transfer; or
  - (D) Process control, such as wet methods and automation.
- (b) You are exempt from using the controls listed above to the extent that:
- (A) You can establish that such controls are not feasible; or
  - (B) You can demonstrate that airborne exposure is below the action level, using no fewer than two representative personal breathing zone samples taken at least 7 days apart, for each affected operation.
- (c) If airborne exposure exceeds the PEL or STEL after implementing the control(s) required by paragraph (5)(a) of this rule, implement additional or enhanced engineering and work practice controls to reduce airborne exposure to or below the exposure limit(s) exceeded.
- (d) When you demonstrate that it is not feasible to reduce airborne exposure to or below the PELs by the engineering and work practice controls required by this rule, implement and maintain engineering and work practice controls to reduce airborne exposure to the lowest levels feasible and supplement these controls by using respiratory protection in accordance with OAR 437-002-2030.
- (6) Prohibition of rotation. Do not rotate employees to different jobs to achieve compliance with the PELs.

Stat. Auth.: ORS 654.025(2) and 656.726(4).  
Stats. Implemented: ORS 654.001 through 654.295.  
Hist: OR-OSHA Admin. Order 3-2017, f. 07/07/17, ef. 03/12/18.  
OR-OSHA Admin. Order 1-2018, f. 03/12/18, ef. 03/12/18.

## **437-002-2030     Respiratory protection**

This rule applies to all respirator use.

- (1) Where respiratory protection is required by this subdivision, provide each employee an appropriate respirator that complies with the requirements of this rule and §1910.134. Respiratory protection is required:
- (a) Where exposures exceed the PEL or STEL during periods necessary to install or implement feasible engineering and work practice controls;

- (b) Where exposures exceed the PEL or STEL during tasks, such as certain maintenance and repair tasks, for which engineering and work practice controls are not feasible;
  - (c) During tasks for which an employer has implemented all feasible engineering and work practice controls and such controls are not sufficient to reduce exposures to or below the PEL or STEL;
  - (d) During emergencies;
  - (e) When an employee who is eligible for medical removal under OAR 437-002-2035 chooses to remain in a job with airborne exposure at or above the action level, as permitted by that rule.
- (2) Where respirator use is required by this rule, institute a respiratory protection program in accordance with §1910.134.
- (3) Provide a powered air-purifying respirator (PAPR) instead of a negative pressure respirator at no cost to the employee when:
- (a) Respiratory protection is required by this rule;
  - (b) An employee entitled to such respiratory protection requests a PAPR; and
  - (c) The PAPR provides adequate protection to the employee.

Stat. Auth.: ORS 654.025(2) and 656.726(4).

Stats. Implemented: ORS 654.001 through 654.295.

Hist: OR-OSHA Admin. Order 3-2017, f. 07/07/17, ef. 03/12/18.

OR-OSHA Admin. Order 1-2018, f. 03/12/18, ef. 03/12/18.

### **437-002-2045 Personal protective clothing and equipment**

This rule applies to all personal protective equipment and clothing.

- (1) Provide appropriate personal protective clothing and equipment at no cost to employees in accordance with the written exposure control plan required under OAR 437-002-2029, 437-002-0134, and 437-003-0134:
- (a) Where airborne exposure exceeds, or can reasonably be expected to exceed, the TWA PEL or STEL; or
  - (b) Where there is a reasonable expectation of dermal contact with beryllium.
- (2) Ensure employees use provided protective clothing and equipment.
- (3) Removal and storage.

- (a) Ensure that each employee removes all beryllium-contaminated personal protective clothing and equipment at the end of the work shift, at the completion of tasks involving beryllium, or when personal protective clothing or equipment becomes visibly contaminated with beryllium, whichever comes first.
  - (b) Ensure that each employee removes beryllium-contaminated personal protective clothing and equipment as specified in the written exposure control plan required by 437-002-2029.
  - (c) Ensure that each employee stores and keeps beryllium-contaminated personal protective clothing and equipment separate from street clothing and that storage facilities prevent cross-contamination as specified in the written exposure control plan required by 437-002-2029
  - (d) Ensure that no employee removes beryllium-contaminated personal protective clothing or equipment from the workplace, except for employees authorized to do so for the purposes of laundering, cleaning, maintaining or disposing of beryllium-contaminated personal protective clothing and equipment at an appropriate location or facility away from the workplace.
  - (e) When personal protective clothing or equipment required by this rule is removed from the workplace for laundering, cleaning, maintenance or disposal, ensure that personal protective clothing and equipment are stored and transported in sealed bags or other closed containers that are impermeable and are labeled in accordance with 437-002-2036 and the hazard communication standard (HCS) §1910.1200.
- (4) Cleaning and replacement.
- (a) Ensure that all reusable personal protective clothing and equipment required by this rule is cleaned, laundered, repaired, and replaced as needed to maintain its effectiveness.
  - (b) Ensure that beryllium is not removed from personal protective clothing and equipment by blowing, shaking or any other means that disperses beryllium into the air.
  - (c) Inform in writing the persons or the business entities who launder, clean or repair the personal protective clothing or equipment required by this rule of the potentially harmful effects of airborne exposure to and dermal contact with beryllium and that the personal protective clothing and equipment must be handled in accordance with this rule.

Stat. Auth.: ORS 654.025(2) and 656.726(4).  
Stats. Implemented: ORS 654.001 through 654.295.  
Hist: OR-OSHA Admin. Order 3-2017, f. 07/07/17, ef. 03/12/18.  
OR-OSHA Admin. Order 1-2018, f. 03/12/18, ef. 03/12/18.

## 437-002-2032 Hygiene areas and practices

This rule covers hygiene requirements for all employers covered under the beryllium rule scope, 437-002-2024.

- (1) For each employee working in a beryllium work area or required to use personal protective clothing or equipment by this subdivision, you must:
  - (a) Provide readily accessible washing facilities in accordance with this rule and the Sanitation standards §1910.141 and §1926.51 to remove beryllium from the hands, face, and neck; and
  - (b) Ensure that employees who have dermal contact with beryllium wash any exposed skin at the end of the activity, process, or work shift and prior to eating, drinking, smoking, chewing tobacco or gum, applying cosmetics, or using the toilet.
  - (c) Provide employees with a designated change room where employees are required to remove their personal clothing.
- (2) Wherever the employer allows employees to consume food or beverages at a worksite where beryllium is present, you must ensure that:
  - (a) Surfaces in eating and drinking areas are as free as practicable of beryllium:
  - (b) Employees do not enter any eating or drinking area with personal protective clothing or equipment unless, prior to entry, surface beryllium has been removed from the clothing or equipment by methods that do not disperse beryllium into the air or onto an employee's body; and
  - (c) Eating and drinking facilities provided by the employer are in accordance with the Sanitation standards (§ 1910.141 or §1926.51).
- (3) Ensure that employees do not eat, drink, smoke, chew tobacco or gum, or apply cosmetics in regulated areas or work areas where there is a reasonable expectation of exposure above the TWA PEL or STEL.
- (4) On fixed sites, provide showers when:
  - (a) Airborne exposures exceed or can reasonably be expected to exceed, the PEL or STEL.



- (b) Beryllium can reasonably be expected to contaminate employees' hair or body parts other than hands, face, and neck.
- (5) When showers on fixed sites are required, ensure that each employee showers at the end of the work shift or work activity if:
- (a) The employee reasonably could have had airborne exposure above the TWA PEL or STEL; and
  - (b) Beryllium could reasonably have contaminated the employee's hair or body parts other than hands, face, and neck.

Stat. Auth.: ORS 654.025(2) and 656.726(4).  
Stats. Implemented: ORS 654.001 through 654.295.  
Hist: OR-OSHA Admin. Order 3-2017, f. 07/07/17, ef. 03/12/18.  
OR-OSHA Admin. Order 1-2018, f. 03/12/18, ef. 03/12/18.

### 437-002-2033 Housekeeping

This rule covers housekeeping requirements for all employers covered under the beryllium rule scope, 437-002-2024.

- (1) Ensure that all spills and emergency releases of beryllium are cleaned up promptly and in accordance with the written exposure control plan required by 437-002-2029.
- (2) When cleaning beryllium-contaminated areas, or surfaces in beryllium work areas, ensure the use of HEPA-filtered vacuuming or other methods that minimize the likelihood and level of airborne exposure.
- (3) Do not allow dry sweeping or brushing for cleaning surfaces unless HEPA-filtered vacuuming or other methods that minimize the likelihood and level of airborne exposure are not safe or effective.
- (4) Do not allow the use of compressed air for cleaning beryllium-contaminated surfaces unless the compressed air is used in conjunction with a ventilation system designed to capture the particulates made airborne by the use of compressed air.
- (5) Do not allow dry sweeping or dry brushing where such activity could contribute to employee exposure to beryllium unless wet sweeping, HEPA-filtered vacuuming or other methods that minimize the likelihood of exposure are not feasible.

- (6) Where employees use dry sweeping, brushing, or compressed air to clean beryllium-contaminated surfaces, the employer must provide, and ensure that each employee uses, respiratory protection and personal protective clothing and equipment in accordance with this subdivision.
- (7) Ensure that cleaning equipment is handled and maintained in a manner that minimizes the likelihood and level of airborne exposure and the re-entrainment of airborne beryllium in the workplace.
- (8) On fixed sites, maintain all surfaces in beryllium work areas as free as practicable of beryllium and in accordance with the written exposure control plan required by 437-002-2029.
- (9) Disposal.
  - (a) When transferring beryllium-containing materials from construction activities to another party for use or disposal, ensure that party is provided with a label that meets OAR 437-002-2036.
  - (b) When transferring beryllium-containing materials from fixed sites:
    - (A) Ensure that materials designated for disposal that contain or are contaminated with beryllium are disposed of in sealed, impermeable enclosures, such as bags or containers, that are labeled in accordance with OAR 437-002-2036.
    - (B) Ensure that materials designated for recycling that contain or are contaminated with beryllium are cleaned to be as free as practicable of surface beryllium contamination and labeled in accordance with OAR 437-002-2036.

Stat. Auth.: ORS 654.025(2) and 656.726(4).

Stats. Implemented: ORS 654.001 through 654.295.

Hist: OR-OSHA Admin. Order 3-2017, f. 07/07/17, ef. 03/12/18.

OR-OSHA Admin. Order 1-2018, f. 03/12/18, ef. 03/12/18.

## **437-002-2034 Medical surveillance**

This rule describes the medical monitoring requirements of this subdivision.

- (1) Make medical surveillance available to each employee:
  - (a) Who is or can be reasonably expected to exposed to beryllium at or above the action level for 30 or more days per year;
  - (b) Who shows signs or symptoms of CBD or other beryllium-related health effects;

- (c) Who is exposed to beryllium during an emergency.
- (2) You must also make medical surveillance available to each employee whose most recent written medical opinion required by this rule recommends periodic medical surveillance.

NOTE: The medical evaluation requirements of the respiratory protection rule, §1910.134, still apply for employees wearing respiratory protection.

- (3) Medical surveillance must be provided at no cost to the employee and at a reasonable time and place.
- (4) Ensure that all medical examinations and procedures required by this rule are performed by a PLHCP as defined in 437-002-2025.
- (5) Provide a medical examination:
- (a) Initially within 30 days for every employee covered by paragraph (1) of this rule, except for any employee who has received a medical examination, provided in accordance with this rule, within the last two years;
  - (b) Every two years for each employee covered by paragraphs (1)(a), (1)(b), and (2) of this rule; and
  - (c) At the termination of employment for each employee who meets any of the criteria of paragraph (1) or (2) of this rule at the time of termination. This requirement does not apply if an examination has been provided in accordance with this rule within six months of the date of termination.
- (6) Ensure that the PLHCP conducting the examination advises the employee of the risks and benefits of participating in the medical surveillance program and the employee's right to opt out of any or all parts of the medical examination.
- (7) The examination must include:
- (a) A medical and work history, with emphasis on past and present airborne exposure to or dermal contact with beryllium, smoking history, and any history of respiratory system dysfunction;
  - (b) A physical examination with emphasis on the respiratory system;
  - (c) A physical examination for skin rashes;
  - (d) Pulmonary function tests, performed in accordance with the guidelines established by the American Thoracic Society including forced vital capacity (FVC) and forced expiratory volume in one second (FEV1);

- (e) A standardized BeLPT or equivalent test, upon the first examination and at least every two years thereafter, unless the employee is confirmed positive. If the results of the BeLPT are other than normal, a follow-up BeLPT must be offered within 30 days, unless the employee has been confirmed positive. Samples must be analyzed in a laboratory certified under the College of American Pathologists/Clinical Laboratory Improvement Amendments (CLIA) guidelines to perform the BeLPT.
  - (f) A low dose computed tomography (LDCT) scan, when recommended by the PLHCP after considering the employee's history of exposure to beryllium along with other risk factors, such as smoking history, family medical history, sex, age, and presence of existing lung disease; and
  - (g) Any other test deemed appropriate by the PLHCP.
- (8) Ensure that the examining PLHCP (and the agreed-upon CBD diagnostic center, if an evaluation is required under paragraph (15) of this rule) has a copy of this subdivision and is provided the following information, if known:
- (a) A description of the employee's former and current duties that relate to the employee's airborne exposure to and dermal contact with beryllium;
  - (b) The employee's former and current levels of airborne exposure;
  - (c) A description of any personal protective clothing and equipment, including respirators, used by the employee, including when and for how long the employee has used that personal protective clothing and equipment; and
  - (d) Information from records of employment-related medical examinations previously provided to the employee, currently within the control of the employer, after obtaining written consent from the employee.
- (9) Ensure that the employee receives a written medical report from the licensed physician within 45 days of the examination (including any follow-up BeLPT required under paragraph (7)(e) of this rule) and that the PLHCP explains the results of the examination to the employee. Ensure the written report contains:
- (a) A statement indicating the results of the medical examination, including the licensed physician's opinion as to whether the employee has:
    - (A) Any detected medical condition, such as CBD or beryllium sensitization (i.e., the employee is confirmed positive, as defined in OAR 437-002-2025), that may place the employee at increased risk from further airborne exposure, and

- (B) Any medical conditions related to airborne exposures that require further evaluation or treatment.
  - (b) Any recommendations on:
    - (A) The employee's use of respirators, protective clothing, or equipment;  
or
    - (B) Limitations on the employee's airborne exposure to beryllium.
  - (c) If the employee is confirmed positive or diagnosed with CBD or if the licensed physician otherwise deems it appropriate, the written report must also contain a referral for an evaluation at a CBD diagnostic center.
  - (d) If the employee is confirmed positive or diagnosed with CBD the written report must also contain a recommendation for continued periodic medical surveillance.
  - (e) If the employee is confirmed positive or diagnosed with CBD the written report must also contain a recommendation for medical removal from airborne exposure to beryllium, as described in OAR 437-002-2035.
- (10) Obtain a written medical opinion from the licensed physician within 45 days of the medical examination (including any follow-up BeLPT required by this rule). The written opinion must contain only the following:
- (a) The date of the examination;
  - (b) A statement that the examination has met the requirements of this rule;  
and
  - (c) Any recommended limitations on the employee's use of respirators, protective clothing, or equipment; and
  - (d) A statement that the PLHCP has explained the results of the medical examination to the employee, including any tests conducted, any medical conditions related to airborne exposure that require further evaluation or treatment, and any special provisions for use of personal protective clothing or equipment.
- (11) If the employee provides written authorization, the written opinion must also contain any recommended limitations on the employee's airborne exposure to beryllium.

- (12) If the employee is confirmed positive or diagnosed with CBD or if the licensed physician otherwise deems it appropriate, and the employee provides written authorization, the written opinion must also contain a referral for an evaluation at a CBD diagnostic center.
- (13) If the employee is confirmed positive or diagnosed with CBD and the employee provides written authorization, the written opinion must also contain a recommendation for continued periodic medical surveillance.
- (14) If the employee is confirmed positive or diagnosed with CBD and the employee provides written authorization, the written opinion must also contain a recommendation for medical removal from airborne exposure to beryllium, as described in 437-002-2035.
- (15) When a physician's written medical report indicates that the employee has been confirmed positive or diagnosed with CBD, or recommends referral to a CBD diagnostic center, provide an evaluation to the employee at a CBD diagnostic center that is mutually agreed upon by the employer and the employee. This evaluation must be provided within 30 days of receiving the written opinion, and at no cost to the employee.
- (a) Ensure the employee receives a written medical report within 30 days of the medical examination from the CBD diagnostic center that includes:
- (A) A statement indicating the results of the medical examination, including the licensed physician's opinion as to whether the employee has:
- (i) Any detected medical condition, such as CBD or beryllium sensitization (i.e., the employee is confirmed positive, as defined in OAR 437-002-2025), that may place the employee at increased risk from further airborne exposure, and
- (ii) Any medical conditions related to airborne exposure that require further evaluation or treatment.
- (B) Any recommendations on:
- (i) The employee's use of respirators, protective clothing, or equipment; or
- (ii) Limitations on the employee's airborne exposure to beryllium.
- (b) If the employee is confirmed positive or diagnosed with CBD the written report must also contain a recommendation for continued periodic medical surveillance.

- (c) If the employee is confirmed positive or diagnosed with CBD the written report must also contain a recommendation for medical removal from airborne exposure to beryllium, as described in OAR 437-002-2035.
- (16) Obtain a written medical opinion from CBD diagnostic center within 30 days of the medical examination. The written opinion must contain only the following:
- (a) The date of the examination;
  - (b) A statement that the examination has met the requirements of this rule; and
  - (c) Any recommended limitations on the employee's use of respirators, protective clothing, or equipment; and
  - (d) A statement that the PLHCP has explained the results of the medical examination to the employee, including any tests conducted, any medical conditions related to airborne exposure that require further evaluation or treatment, and any special provisions for use of personal protective clothing or equipment.
  - (e) If the employee provides written authorization, the written opinion must also contain:
    - (A) Any recommended limitations on the employee's airborne exposure to beryllium
    - (B) A recommendation for continued periodic medical surveillance if the employee is confirmed positive or diagnosed with CBD;
    - (C) A recommendation for medical removal from airborne exposure to beryllium, as described in 437-002-2035, if the employee is confirmed positive or diagnosed with CBD.
- (17) After an employee has received the initial clinical evaluation at a CBD diagnostic center, the employee may choose to have any subsequent medical examinations for which the employee is eligible performed at a CBD diagnostic center mutually agreed upon by the employer and the employee. Provide such examinations at no cost to the employee.

Stat. Auth.: ORS 654.025(2) and 656.726(4).  
Stats. Implemented: ORS 654.001 through 654.295.  
Hist: OR-OSHA Admin. Order 3-2017, f. 07/07/17, ef. 03/12/18.  
OR-OSHA Admin. Order 1-2018, f. 03/12/18, ef. 03/12/18.

## 437-002-2035 Medical removal

This rule describes the medical removal requirements of this subdivision.

- (1) An employee is eligible for medical removal, if the employee works in a job with airborne exposure at or above the action level and either:
  - (a) The employee provides the employer with:
    - (A) A written medical report indicating a confirmed positive finding or CBD diagnosis; or
    - (B) A written medical report recommending removal from airborne exposure to beryllium in accordance OAR 437-002-2034; or
  - (b) The employer receives a written medical opinion recommending removal from airborne exposure to beryllium in accordance with 437-002-2034.
- (2) If an employee is eligible for medical removal, provide the employee with the employee's choice of:
  - (a) Removal as described in paragraph (3) of this rule; or
  - (b) Remaining in a job with airborne exposure at or above the action level, provided that the employer provides, and ensures that the employee uses, respiratory protection that complies with OAR 437-002-2030 whenever airborne exposures are at or above the action level.
- (3) If the employee chooses removal:
  - (a) If a comparable job is available where airborne exposures to beryllium are below the action level, and the employee is qualified for that job or can be trained within one month, the employer must remove the employee to that job. The employer must maintain for six months from the time of removal the employee's base earnings, seniority, and other rights and benefits that existed at the time of removal.
  - (b) If comparable work is not available, the employer must maintain the employee's base earnings, seniority, and other rights and benefits that existed at the time of removal for six months or until such time that comparable work described in paragraph (3)(a) of this rule becomes available, whichever comes first.



- (4) Your obligation to provide medical removal protection benefits to a removed employee must be reduced to the extent that the employee receives compensation for earnings lost during the period of removal from a publicly or employer-funded compensation program, or receives income from another employer made possible by virtue of the employee's removal.

Stat. Auth.: ORS 654.025(2) and 656.726(4).  
Stats. Implemented: ORS 654.001 through 654.295.  
Hist: OR-OSHA Admin. Order 3-2017, f. 07/07/17, ef. 03/12/18.

### **437-002-2036      Communication of beryllium hazards to employees**

- (1) Chemical manufacturers, importers, distributors, and employers must ensure that compliance with the requirements of the hazard communication rule (§1910.1200) for beryllium. In classifying the hazards of beryllium, the following hazards must be addressed:
- (a) Cancer;
  - (b) Lung effects (CBD and acute beryllium disease);
  - (c) Beryllium sensitization;
  - (d) Skin sensitization; and
  - (e) Skin, eye, and respiratory tract irritation.
- (2) Include beryllium in the hazard communication program established to comply with the hazard communication rule. Ensure that each employee has access to labels on containers of beryllium and to safety data sheets, and is trained in accordance with the requirements of the hazard communication standard (§1910.1200) and paragraph (4) of this rule.
- (3) Label each bag and container of clothing, equipment, and materials contaminated with beryllium, and, at a minimum, include the following on the label:

DANGER  
CONTAINS BERYLLIUM  
MAY CAUSE CANCER  
CAUSES DAMAGE TO LUNGS  
AVOID CREATING DUST  
DO NOT GET ON SKIN

- (4) For each employee who has, or can reasonably be expected to have, airborne exposure to or dermal contact with beryllium:

- (a) Provide initial training to each employee by the time of initial assignment; and
  - (b) Repeat the training required under this rule annually for each employee.
- (5) Ensure that each employee who is, or can reasonably be expected to be, exposed to airborne beryllium can demonstrate knowledge and understanding of the following:
- (a) The health hazards associated with airborne exposure to and contact with beryllium, including the signs and symptoms of CBD;
  - (b) The written exposure control plan, with emphasis on the location(s) of beryllium work areas, including any regulated areas, and the specific nature of operations that could result in airborne exposure, especially airborne exposure above the TWA PEL or STEL;
  - (c) The purpose, proper selection, fitting, proper use, and limitations of personal protective clothing and equipment, including respirators;
  - (d) Applicable emergency procedures;
  - (e) Measures employees can take to protect themselves from airborne exposure to and contact with beryllium, including personal hygiene practices;
  - (f) The purpose and a description of the medical surveillance program required by OAR 437-002-2034 including risks and benefits of each test to be offered;
  - (g) The purpose and a description of the medical removal protection provided under OAR 437-002-2035;
  - (h) The contents of the standard; and
  - (i) The employee's right of access to records under the Records Access standard (§1910.1020).
- (6) When a workplace change (such as modification of equipment, tasks, or procedures) results in new or increased airborne exposure that exceeds, or can reasonably be expected to exceed, either the TWA PEL or the STEL, provide additional training to those employees affected by the change in airborne exposure
- (7) Make a copy of this subdivision and its appendices readily available at no cost to each employee and designated employee representative(s).

Stat. Auth.: ORS 654.025(2) and 656.726(4).  
Stats. Implemented: ORS 654.001 through 654.295.  
Hist: OR-OSHA Admin. Order 3-2017, f. 07/07/17, ef. 03/12/18  
OR-OSHA Admin. Order 1-2018, f. 03/12/18, ef. 03/12/18.

## 437-002-2037 Recordkeeping

### (1) Air monitoring data.

- (a) Make and maintain an accurate record of all exposure measurements taken to assess employee exposure to beryllium, as prescribed in 437-002-2040.
- (b) This record must include at least the following information:
  - (A) The date of measurement for each sample taken;
  - (B) The task monitored;
  - (C) Sampling and analytical methods used and evidence of their accuracy;
  - (D) Number, duration, and results of samples taken;
  - (E) Type of personal protective clothing and equipment, including respirators, worn by the employees monitored; and
  - (F) Name, social security number, and job classification of all employees represented by the monitoring, indicating which employees were actually monitored.
- (c) Ensure that exposure records are maintained and made available in accordance with §1910.1020.

### (2) Objective data.

- (a) Make and maintain an accurate record of all objective data relied upon to comply with the requirements of this subdivision.
- (b) This record must include at least the following information:
  - (A) The data relied upon;
  - (B) The beryllium-containing material in question;
  - (C) The source of the objective data;
  - (D) A description of the process, task, or activity on which the objective data were based; and

- (E) Other data relevant to the process, task, activity, material, or exposures on which the objective data were based.
- (c) Ensure that objective data are maintained and made available in accordance with §1910.1020.
- (3) Medical surveillance.
- (a) Make and maintain an accurate record for each employee covered by medical surveillance under 437-002-2034.
- (b) The record must include the following information about the employee:
- (A) Name and social security number;
- (B) A copy of the PLHCPs' and specialists' written medical opinions;
- (C) A copy of the information provided to the PLHCPs and specialists.
- (c) Ensure that medical records are maintained and made available in accordance with §1910.1020.
- (4) Training.
- (a) At the completion of any training required by this standard, the employer must prepare a record that indicates the name, social security number, and job classification of each employee trained, the date the training was completed, and the topic of the training.
- (b) This record must be maintained for three years after the completion of training.
- (5) Upon request, you must make all records maintained as a requirement of this subdivision available for examination and copying to the Director of the Oregon Department of Consumer and Business Services, or designee, and the Director of the National Institute for Occupational Safety and Health (NIOSH), U.S. Department of Health and Human Services, or designee, each employee, and each employee's designated representative(s) in accordance the Records Access standard §1910.1020).
- (6) Comply with the requirements involving transfer of records set forth in the Records Access standard (§1910.1020).

Stat. Auth.: ORS 654.025(2) and 656.726(4).

Stats. Implemented: ORS 654.001 through 654.295.

Hist: OR-OSHA Admin. Order 3-2017, f. 07/07/17, ef. 03/12/18.

OR-OSHA Admin. Order 1-2018, f. 03/12/18, ef. 03/12/18.

**437-002-2038 DATES**

This rule is effective March 12, 2018, except:

- (1) Change rooms and showers required by 437-002-2032 must be provided by March 11, 2019; and
- (2) Engineering controls required by OAR 437-002-2029 must be implemented by March 10, 2020.

Stat. Auth.: ORS 654.025(2) and 656.726(4).

Stats. Implemented: ORS 654.001 through 654.295.

Hist: OR-OSHA Admin. Order 3-2017, f. 07/07/17, ef. 03/12/18.



## Notes

### Historical Notes for Subdivision Z, Beryllium

**Note:** On January 9, 2017, federal OSHA adopted final rules for beryllium for general industry, construction, and maritime. Before these rules, the only specific rule for beryllium was an airborne permissible exposure limit (PEL) of 2 micrograms per cubic meter of air ( $\mu\text{g}/\text{m}^3$ ). With the adoption of these rules, federal OSHA lowered the PEL from 2  $\mu\text{g}/\text{m}^3$  to 0.2  $\mu\text{g}/\text{m}^3$ , and instituted an action level of 0.1  $\mu\text{g}/\text{m}^3$ . These rules require an exposure assessment, with periodic monitoring under certain circumstances, requires engineering and work practice controls to reduce exposure levels, institutes a written exposure control plan, requires provisions for regulating employee access to certain areas, respiratory protection, medical surveillance, and employee training and information.

Oregon OSHA combined the requirements of the general industry and construction rules into one set of rules applicable to both industries, as new Oregon-initiated rules OAR 437-002-2024 through 437-002-2026, 437-002-2028 through 437-002-2030, 437-002-2032 through 437-002-2038, 437-002-2040, and 437-002-2045.

Oregon OSHA also updated the air contaminants rules for general industry and construction, OAR 437-002-0382 and 437-003-1000, to reflect the new beryllium rules.

Two public hearings were held during June of 2017. Oregon OSHA did not receive any comments at these hearings. We received one written comment in support of this rulemaking.

This is Oregon OSHA **Administrative Order 3-2017, adopted July 7, 2017 and effective March 12, 2018.**

**Note:** OAR 437-002-2025, Definitions, was re-filed on July 31, 2017 in order to correct an error in our definition of Permissible Exposure Limit (PEL) within this specific rule. Originally, this rule was filed with an incorrect definition of PEL as being 0.1  $\mu\text{g}/\text{m}^3$ . This was corrected to the accurate PEL of 0.2  $\mu\text{g}/\text{m}^3$ . This re-filing did not effect any other rules and did not change the effective dates of these rules.

This is Oregon OSHA **Administrative Order 4-2017, adopted July 31, 2017 and effective March 12, 2018.**

**Note:** Oregon OSHA intended to adopt federal OSHA's requirements for beryllium of 1910.1024 and 1926.1124 with Oregon's Administrative Order (AO) 3-2017. AO 3-2017 adopted the majority of federal OSHA's final rule requirements as published in the January 9, 2017 Federal Register for occupational exposure to beryllium. Several requirements for housekeeping and waste disposal were unintentionally omitted in Oregon OSHA's rulemaking process, as well as a few inclusions in the requirements for recordkeeping that were artifacts from earlier rulemaking. This rulemaking will also be used to correct typographical and citation errors within the beryllium rules. By amending Division 2/Z-Beryllium, Oregon OSHA will correct these issues and bring Oregon OSHA's requirements into harmony with current federal OSHA standards before Oregon's rules go into effect on March 12, 2018.

Unless Oregon OSHA amends these rules to reflect the correct language in federal OSHA's adopted rules, employers in Oregon will be directed to inaccurate rule requirements when reading Division 2/Z-Beryllium in Oregon after March 12, 2018. No public hearings were held on these corrections, and no written comments were received.

**This is Oregon OSHA Administrative Order 1-2018, adopted November 14, 2017 and effective March 12, 2018.**