

**A S B E S T O S**



**REMOVAL, REPAIR, AND MAINTENANCE**

**What you need to know**

## About this guide

**Asbestos – Removal, repair, and maintenance** is written to help construction industry workers and employers understand the rules and regulations surrounding the dangerous task of working around materials containing asbestos.

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# **ASBESTOS — REMOVAL, REPAIR, AND MAINTENANCE**

**What you need to know**



## Background

Asbestos is the generic term for a group of naturally occurring fibrous minerals with high tensile strength, flexibility, and resistance to thermal, chemical, and electrical conditions.

Exposure to asbestos can cause disabling or fatal diseases such as asbestosis, an emphysema-like condition; lung cancer; mesothelioma, a cancerous tumor that spreads rapidly in the cells of membranes covering the lungs and other organs; and gastrointestinal cancer. The symptoms of these diseases generally do not appear for 20 years or more after exposure.



Asbestos fibers enter the body by inhalation or ingestion of airborne particles that become embedded in the tissues of the respiratory or digestive systems.

Most worker exposures occur during the removal of asbestos and the renovation, demolition, and maintenance of buildings and structures that contain asbestos. In the construction industry, asbestos was used in more than 3,000 building products. Many products commonly found to contain asbestos include boiler, pipe, furnace, and water heater insulation; ceiling and wall texture “popcorn” and “orange peel”; taping mud compound; skim coat; acoustical tiles; sprayed-on insulation and fire proofing; vinyl floor tile; sheet vinyl and linoleum; mastics and glues; cement asbestos board; Niccolite paper under wood roofing shingles; built-up roofing; roof felt and patch; paints, including silver roof paint; stucco and texture; vermiculite and blown-in building insulation; door and cover gaskets; window putty; insulation boards behind and under wood stoves; insulation within older dishwashers and ranges; older electrical wire; black tar coating on the underside of sinks; stove top pads; and ironing board covers.

A common misconception is that all products that contain asbestos are banned for use in the U.S. The only products that are banned from use are fireproofing and insulating products, spray-applied surfacing materials, thermal system insulation (TSI), wet-applied and preformed pipe insulation, pre-formed block insulation for boilers and hot water tanks, corrugated paper, rollboard, commercial paper, specialty paper, flooring felt, and any new use of asbestos.

## **OSHA**

The federal Occupational Safety and Health Administration (OSHA) began regulating workplace asbestos exposure in 1970, adopting a permissible exposure limit (PEL) to regulate worker exposures. Over the years, more information on the adverse health effects of asbestos exposure has become available, prompting the agency to revise the asbestos standard to better protect workers. In 1994, OSHA issued a revised final standard regulating asbestos exposure in all industries. The revised standard for the construction industry lowers the PEL from 0.2 fibers per cubic centimeter (f/cc) of air to 0.1 f/cc. Oregon OSHA adopted this federal standard effective March 29, 1995. (OAR 437-003-1926.1101)

Approximately 3.2 million workers in new construction, building renovation, and maintenance and custodial work are affected by the new standard. OSHA estimates that adherence to the new standard will prevent at least 42 cancer deaths a year.

Oregon OSHA rules presume that building products installed before 1981 contain asbestos, and are defined as presumed asbestos-containing materials (PACM). Treat these materials as though they contain asbestos unless they have been sampled by an appropriately trained inspector and shown not to contain asbestos.

## **DEQ/LRAPA**

The federal Environmental Protection Agency (EPA), Department of Environmental Quality (DEQ), and Lane Regional Air Protection Agency (LRAPA) also have regulations that relate to the proper handling and disposal of asbestos-containing materials to prevent exposure to asbestos fibers. The EPA started regulating asbestos in the early 1970s, recognizing the need to protect the public and the environment from exposure to asbestos fibers. The Oregon DEQ and then LRAPA started regulating asbestos at the local level by 1975.

DEQ/LRAPA rules require that all public and private buildings are surveyed for the presence of asbestos before renovation or demolition. The rules require that all asbestos-containing materials be removed from structures before any activity, including demolition and renovation work, that would disturb the materials causing potential release of asbestos fibers, or preclude access to the materials for future removal.

DEQ/LRAPA rules presume that building products installed before 2004 contain asbestos. They must be sampled before removal begins to determine actual asbestos content.

## Work classification

Oregon OSHA's standard establishes a classification system for asbestos construction work that clearly spells out work practices that reduce worker exposures. Four classes of construction activity are matched with control requirements.<sup>1</sup>

**Class I asbestos work**, the most hazardous class of asbestos jobs, involves the removal of asbestos-containing or presumed asbestos-containing thermal insulation and sprayed-on or troweled-on surfacing material.

Thermal insulation includes asbestos-containing materials applied to pipes, boilers, tanks, ducts, or other structural components to prevent heat loss or gain. Surfacing materials may include decorative plaster on ceilings, acoustical materials on decking, or fireproofing on structural members.

**Class II asbestos work** includes the removal of other types of asbestos-containing materials that are not thermal insulation, such as flooring and roofing materials. Removing intact incidental roofing materials such as cements, mastics, coatings, and flashings is not regulated as Class II. Examples of Class II work include removal of floor or ceiling tiles, siding, roofing, or transite panels.

When a designated competent person deems roofing material being removed as intact, the roofing contractor may make a negative exposure assessment and avoid initial monitoring if both of the following conditions are met:

1. Employees have been trained.
2. The work practices described in the rule are strictly followed.

**Class III asbestos work** includes repair and maintenance operations in which asbestos-containing or presumed asbestos-containing materials are disturbed. The primary purpose of the work is not to remove or disturb asbestos, although some removal or disturbance may occur. Examples of Class III work include repairing broken pipes that have asbestos wrapping, installing floor anchors in an area with asbestos floor tile, or installing electrical conduit through walls with asbestos insulation.

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<sup>1</sup> See Appendix, pages 28-31, for a list of provisions by work classification.



**Class IV operations** include maintenance and custodial activities in which employees contact but do not disturb asbestos-containing materials. These activities must be related to the construction project, usually resulting from Class I, II, or III activities. Custodial work that is not related to a construction project or to Class I, II, or III work is covered by the general industry asbestos rule, OAR 437-002-1910.1001.

DEQ/LRAPA rules approach asbestos exposure in a different manner. Recognizing that public exposures may not be as easily definable, and following the Oregon Legislature's mandate that there is no safe level of exposure, DEQ/ LRAPA crafted rules expressly to prevent or minimize exposures to the public and the environment. To that end, the DEQ/LRAPA asbestos rules require specific work practice and engineering controls for those removing asbestos and require DEQ licensing for all contractors who remove friable asbestos. Workers must be trained and certified to remove friable asbestos. DEQ/LRAPA asbestos rules require determining whether a material is friable or nonfriable, then appropriately handling those materials.

**Friable asbestos:** Any asbestos-containing material that hand pressure can crumble, pulverize, or reduce to powder when dry. Friable asbestos materials must be removed by contractors licensed by DEQ. These contractors must use workers trained and certified through a DEQ training program. People trained to the supervisory level of the DEQ certification program also meet OSHA's competent-person requirements. Friable asbestos disposal requires specific packaging and labeling and must be disposed of at a landfill permitted to receive asbestos waste.

**Nonfriable asbestos:** Asbestos-containing material that hand pressure cannot crumble, pulverize, or reduce to powder when dry. (**Note:** *The use of power tools, shattering, or the forces normally placed on nonfriable material during the course of demolition will render the nonfriable material friable.*) Nonfriable asbestos materials may be removed by contractors not licensed by DEQ, and worker certification is not required. However, DEQ recommends that a competent person be available for nonfriable removal projects. Nonfriable asbestos disposal must take place at a landfill permitted to receive asbestos waste.



Old purple corrugated asbestos cement roof sheet.

## Scope and application

The asbestos standard for the construction industry (OAR 437-003-1926.1101) regulates asbestos exposure for workers and DEQ/LRAPA regulates asbestos exposure to the public and the environment in the following activities:

- Demolishing, renovating, or salvaging structures where asbestos is present
- Removing or encapsulating asbestos-containing materials
- Constructing, altering, repairing, maintaining, or renovating asbestos-containing structures or substrates
- Installing asbestos-containing products
- Cleaning up asbestos spills/emergencies
- Transporting, disposing of, storing, containing, and housekeeping involving asbestos or asbestos-containing products on a construction site



## Provisions of the standard

Employers must follow several provisions to comply with the asbestos standard. Oregon OSHA has established strict exposure limits and requirements for exposure assessment, medical surveillance, recordkeeping, competent persons, regulated areas, and hazard communication.

**Permissible exposure limit (PEL)** — Employers must ensure that no employee is exposed to an airborne concentration of asbestos in excess of 0.1 fiber per cubic centimeter of air (f/cc) as an eight-hour time-weighted average (TWA).

**Excursion limit** — Employers must ensure that no employee is exposed to an airborne concentration of asbestos in excess of 1 f/cc as averaged over a sampling period of 30 minutes.

**Short-term exposure limit (STEL)** – short-term exposure limit (STEL) is the maximum concentration to which workers can be continuously exposed for a period of up to 15 minutes without suffering irritation, chronic or irreversible tissue change, or narcosis of sufficient degree to increase accident proneness, impair self-rescue, or materially reduce work efficiency, provided that no more than four excursions per day are permitted, with at least 60 minutes between exposure periods, and provided that the daily PEL also is not exceeded. The STEL is a maximum allowable concentration, or ceiling, not to be exceeded during the 15-minute excursion.

**Exposure assessments and monitoring** — Employers must assess all asbestos operations for their potential to generate airborne fibers. Employers must use exposure-monitoring data to assess employee exposures.

### **Initial exposure assessments**

The designated competent person<sup>2</sup> must assess exposures immediately before or as the operation begins to determine expected exposures. The assessment must be done in time to comply with all standard requirements triggered by exposure data or the lack of a negative exposure assessment<sup>3</sup> and to provide information ensuring control systems are appropriate and work properly.

The initial exposure assessment must be based on the following:

- The results of employee exposure monitoring<sup>4</sup>
- All observations, information, or calculations indicating employee exposure to asbestos, including any previous monitoring
- The presumption that employees performing Class I asbestos work have been exposed in excess of the PEL and STEL until exposure monitoring proves otherwise

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<sup>2</sup> Defined by the standard as one who can identify existing asbestos hazards in the workplace and who has the authority to correct these hazards.

<sup>3</sup> A negative exposure assessment demonstrates that employee exposure during an operation is consistently below the PEL.

<sup>4</sup> Unless there has been a negative exposure assessment. In certain less-hazardous operations, the employer may be exempt from monitoring. See OAR 437-003-1926.1101 for specific requirements.

## Negative exposure assessments

For any specific asbestos job that trained employees perform, employers may show that exposure will be below the PEL by performing an assessment and confirming it by the following:

- Objective data demonstrating an asbestos-containing material or activities involving it cannot release airborne fibers in excess of the PEL and STEL
- Historical data from prior monitoring for similar asbestos jobs performed within 12 months of the current job and obtained during work operations conducted under similar conditions
- Employees' training and experience were no more extensive for previous jobs than training for current employees
- Data shows a high degree of certainty that employee exposures will not exceed the PEL and STEL under current conditions
- Current initial exposure monitoring used breathing zone air samples representing the eight-hour TWA and 30-minute short-term exposures for each employee in those operations most likely to result in exposures exceeding the PEL for the entire asbestos job



Broken asbestos floor tiles

## **Exposure monitoring**

Employee exposure measurements must be made from breathing zone air samples representing the eight-hour TWA and 30-minute short-term exposures for each employee.

Employers must take one or more samples representing full-shift exposure to determine the eight-hour TWA exposure in each work area. To determine short-term employee exposures, employers must take one or more samples representing 30-minute exposures for the operations most likely to expose employees above the excursion limit in each work area.

Employers must allow affected employees and their designated representatives to observe any employee exposure monitoring. When observation requires entry into a regulated area, the employer must provide and require the use of protective clothing and equipment.

## **Periodic monitoring**

For Class I and II jobs, conduct daily monitoring that is representative of the exposure of each employee working in a regulated area, unless a negative exposure assessment for the entire operation already exists and nothing has changed. When all employees use supplied-air respirators operated in positive-pressure mode, employers may discontinue daily monitoring. If employees are performing Class I work using control methods not recommended in the standard, employers must continue daily monitoring, even when employees use supplied-air respirators.

For operations other than Class I and II, employers must monitor all work in which exposures can exceed the PEL often enough to validate the exposure prediction. If periodic monitoring shows employee exposures below the PEL and STEL, the employer may discontinue monitoring.

## **Additional monitoring**

Changes in processes, control equipment, level of personnel experience, or work practices that could result in exposures above the PEL or STEL — regardless of a previous negative exposure assessment for a specific job — require additional monitoring.

## Medical surveillance

Employers must provide a medical surveillance program for all employees:

- Who are or will be exposed to asbestos at or above the PEL or STEL for a total of 30 or more days per year and engage in Class I, II, or III work. (**Note:** *The 30-day requirement excludes days in which less than one hour is spent in Class II or III work when work practices specified by the code are followed.*)
- Who wear negative-pressure respirators.

A licensed physician must perform or supervise all medical exams and procedures, which are to be provided at no cost to employees and at a reasonable time of day and week. Employers must make medical exams and consultations available to employees:

- Before employee assignment to an area where negative-pressure respirators are worn
- Within 10 working days after the 30th day of exposure for employees assigned to an area where exposure is at or above the PEL for 30 or more days per year
- At least annually thereafter
- When the examining physician suggests them more frequently

If, however, the employee was examined within the past 12 months and that exam meets the criteria of the standard, another medical exam is not required.



Medical exams must include the following:

- A medical and work history
- Completion of a standardized questionnaire with the initial exam (See OAR 437-003-1926.1101, Appendix D, Part 1) and an abbreviated standardized questionnaire with annual exams (See OAR 437-0031926.1101, Appendix D, Part 2)
- A physical exam focusing on the pulmonary and gastrointestinal systems
- Any other exams or tests suggested by the examining physician

Employers must provide the examining physician the following:

- A copy of OSHA's asbestos standard and its appendices
- A description of the affected employee's duties relating to exposure
- The employee's representative exposure level or anticipated exposure level
- A description of any personal protective equipment and respiratory equipment used
- Information from previous medical exams not otherwise available

It is the employer's responsibility to obtain the physician's written opinion containing results of the medical exam and the following:

- Whether the employee has any medical condition that would place the employee at increased risk from exposure to asbestos
- Any recommended limitations on the employee or protective equipment used
- A statement that the employee has been informed of the results of the medical exam and any medical conditions resulting from asbestos exposure
- A statement that the employee has been informed of the increased risk of lung cancer from the combined effect of smoking and asbestos exposure

The physician must not reveal specific findings or diagnoses unrelated to occupational exposure to asbestos in the written opinion. The employer must provide a copy of the physician's written opinion to the affected employee within 30 days of receipt.

## Recordkeeping

### Objective data

Objective data records are kept only for Oregon OSHA. DEQ/LRAPA rules apply regardless of the following.

If employers use objective data to demonstrate that products made from or containing asbestos cannot release fibers in concentrations at or above the PEL or STEL, they must keep an accurate record for as long as it is relied on and include the following information:

- The exempt product
- The source of the objective data
- The testing protocol, test results, and analysis of the material for release of asbestos
- A description of the exempt operation and support data
- Other data relevant to operations, materials, processes, or employee exposures

### Monitoring records

Employers must keep the following records of all employee exposure monitoring for at least 30 years:

- Date of measurement
- The operation involving asbestos exposure that was monitored
- Sampling and analytical methods used and evidence of their accuracy
- Number, duration, and results of samples taken
- Type of protective devices worn
- Names, Social Security numbers, and exposures of the employees

Exposure records must be available upon request to affected employees and former employees, their designated representatives, and Oregon OSHA.



## **Medical surveillance records**

Employers must keep all medical surveillance records for the duration of the employee's employment plus 30 years, including:

- Employee's name and Social Security number
- The employee's medical exam results, including the medical history, questionnaires, responses, test results, and physician's recommendations
- The physician's written opinions
- Employee medical complaints related to asbestos exposure
- A copy of the information provided to the examining physician

Employee medical surveillance records must be available to the subject employee, to anyone having specific written consent of that employee, and to Oregon OSHA.

## **Other recordkeeping requirements**

Employers must maintain all employee training records for one year beyond the last date of employment for each employee.

If data demonstrate presumed asbestos-containing materials do not contain asbestos, building owners or employers must keep the records for as long as they rely on them. Building owners must maintain written notifications on the identification, location, and quantity of asbestos-containing or presumed asbestos-containing materials for the duration of ownership and transfer the records to successive owners.

When an employer ceases to do business without a successor to keep the records, the employer must notify the director of the National Institute for Occupational Safety and Health (NIOSH) at least 90 days prior to the records' disposal and transmit them as requested.

## “Competent person” requirements

(DEQ supervisor training is equivalent)

Asbestos is among the construction rules that require a designated competent person who is capable of identifying existing or potential safety and health hazards and has the authority to fix those hazards. However, there are additional training requirements and expectations in order for this person to be considered a competent person under the asbestos rule.

Oregon OSHA requires that the competent person must inspect Class I job sites at least once during each work shift and upon employee request. The competent person must inspect Class II and Class III job sites often enough to assess changing conditions and upon employee request.

DEQ/LRAPA requires that the DEQ-licensed supervisor must remain on site when more than three linear or three square feet of asbestos-containing material is removed.

At Class I or II asbestos-work job sites and all DEQ friable asbestos projects, the competent person must supervise the following:

- The integrity of regulated areas, enclosures, or other containments by on-site inspection
- Procedures to control entry and exit of the job site
- Employee exposure monitoring
- Employee use of required protective clothing, equipment, and glove bags<sup>5</sup>, if used
- Proper setup, removal, and performance of engineering controls, work practices, and personal protective equipment
- Employee use of hygiene facilities and required decontamination procedures

The competent person must attend a comprehensive training course for contractors and supervisors that is certified by the U.S. Environmental Protection Agency (EPA) that is a DEQ-approved training provider.

For Class III and IV asbestos work, training must include a course equivalent in length and content to the 16-hour “Operations and Maintenance” course developed by EPA for maintenance and custodial workers.<sup>6</sup>

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<sup>5</sup> *A plastic bag-like enclosure for asbestos-containing material, with glove-like appendages through which materials and tools may be handled.*

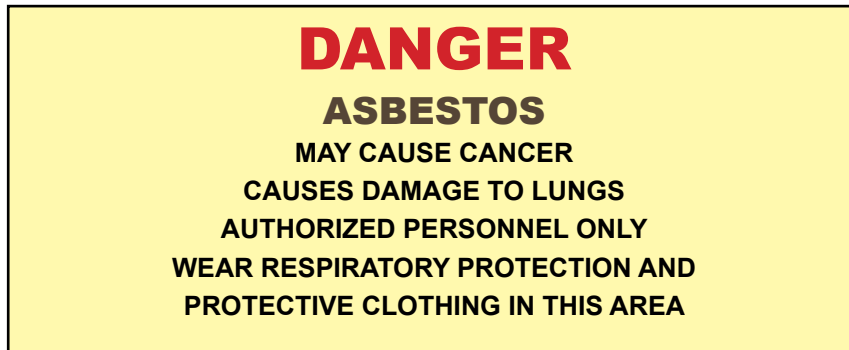
<sup>6</sup> *For more specific information, see EPA Standard on Asbestos 40 CFR 763.92(a) (2).*

## Regulated areas

A regulated area is a marked site where employees work with asbestos. It includes any adjoining areas where debris and waste from asbestos work accumulates or where airborne concentrations of asbestos exceed or can exceed the PEL.

All Class I, II, and III asbestos work must be done within regulated areas. Only authorized personnel<sup>7</sup> may enter. The designated competent person supervises all asbestos work performed in the area. (See *Competent person requirements, Pages 15 and 33.*) Employers must mark the regulated area in any manner that minimizes the number of people within the area and protects people outside the area from exposure to airborne asbestos. Critical barriers<sup>8</sup> or negative-pressure enclosures may mark the regulated area. DEQ/LRAPA requires negative pressure enclosures on all friable asbestos abatement projects.

Posted warning signs marking the area must be easily readable and understandable. The signs must bear the following information:



Employers must supply a respirator to each person entering regulated areas. (See *Respiratory protection, Page 26.*) Employees must not eat, drink, smoke, chew tobacco or gum, or apply cosmetics in regulated areas.

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<sup>7</sup> Any person permitted by the employer and required by work duties to be in regulated areas.

<sup>8</sup> Plastic sheeting placed over all openings to the work area to prevent airborne asbestos from migrating to an adjacent area.

An employer performing work in a regulated area must inform other employers on site of the following:

- The nature of the work
- Regulated area requirements
- Measures taken to protect on-site employees

The contractor creating or controlling the source of asbestos contamination must abate the hazards. All employers with employees working near regulated areas must assess the enclosure's integrity or the effectiveness of control methods to prevent airborne asbestos from migrating. This assessment must be done daily.

A general contractor on a construction project must oversee all asbestos work, even though he or she may not be the designated competent person. As supervisor of the entire project, the general contractor determines whether asbestos contractors comply with the standard and ensures that they correct any problems.

## **Communication of hazards**

### **Notification requirements**

The communication of asbestos hazards is vital to prevent further overexposure. Most asbestos-related construction involves previously installed building materials. Building owners are often the only or best source of information concerning these materials. Building owners and employers of potentially exposed employees have specific duties under the standard.

Before beginning work, building owners must identify all PACM, including thermal insulation, sprayed or troweled-on surfacing materials, and resilient flooring material. Building owners must notify the following in writing about the possible presence, locations, and quantity of asbestos-containing materials:

- Prospective employers applying or bidding for work in or adjacent to areas containing asbestos
- All workers in or adjacent to these areas
- Tenants who may occupy the areas containing asbestos



All employers discovering asbestos-containing materials on a worksite must notify the building owner and other employers on site within 24 hours. They must inform building owners of the presence, location, and quantity of the asbestos-containing materials. Employers also must inform building owners and employees working in nearby areas of the precautions taken to confine airborne asbestos. Within 10 days of project completion, employers must inform building owners and other employers on site of the location and quantity of remaining asbestos-containing materials and any final monitoring results.

At any time, employers or building owners may demonstrate that a material does not contain asbestos by inspecting the material according to the requirements of the Asbestos Hazard Response Act (40 CFR 763, Subpart E), performing tests to prove asbestos is not present<sup>9</sup>, and obtaining approval from DEQ/LRAPA in writing. However, Oregon OSHA rules do not allow for “composite” sampling to show a product does not contain asbestos. Each layer must be sampled and analyzed individually to determine asbestos content.

Employers do not have to inform employees that building materials do not contain asbestos; however, employers must retain the information, data, and analysis supporting the determination. (See Recordkeeping, Page 14, for specific information.)

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<sup>9</sup> See OAR 437-003-1926.1101 for specific testing requirements.

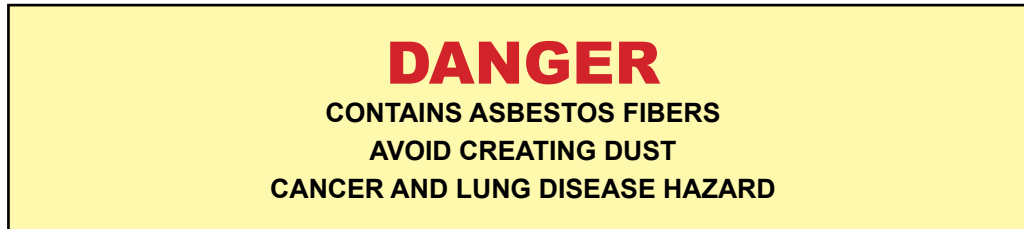
## Signs

At entrances to rooms or areas containing asbestos thermal insulation and surfacing materials, the building owner must post signs identifying the material, its location, and work practices that ensure it is not disturbed.

Employers must post signs in regulated areas to inform employees of the dangers and precautions. (See Regulated areas, Page 16, and Appendix, Page 33.)

## Labels

Employers must attach warning labels to all products and containers of asbestos, including waste containers, and all installed asbestos products, when possible. Labels must be printed in large, bold letters on a contrasting background and used in accordance with Oregon OSHA's Hazard Communication Standard (OAR 437-002-1910.1200). All labels must contain a statement warning against breathing asbestos fibers and contain the following:



Labels are not required when asbestos concentration is less than 1 percent by weight or when a bonding agent, coating, or binder has altered asbestos fibers, prohibiting the release of airborne asbestos over the PEL or STEL during reasonable use, handling, storage, disposal, processing, or transportation. DEQ/LRAPA require labels only on asbestos waste-disposal packages.

When building owners or employers identify previously installed possible asbestos-containing materials, labels or signs must be attached or posted to inform employees which materials contain asbestos. Attached labels must be clearly noticeable and readable.

## Employee information and training

Employers must provide training for all employees installing and handling asbestos-containing products and for employees performing Class I through IV asbestos operations. Training must be provided at no cost and before or upon beginning these jobs and at least annually thereafter.

Training courses must be easily understandable to employees and must inform them of the following:

- Ways to recognize asbestos
- Adverse health effects of asbestos exposure
- The relationship between smoking and asbestos in causing lung cancer
- Operations that could result in asbestos exposure and the importance of protective controls to minimize exposure
- The purpose, proper use, fitting instruction, and limitations of respirators
- The appropriate work practices for performing asbestos jobs
- Medical surveillance program requirements
- The contents of the asbestos standard
- The names, addresses, and phone numbers of public health organizations that provide information and materials or conduct smoking-cessation programs
- Required signs and labels and their meanings

The employer also must provide, at no cost to employees, written materials relating to employee training and self-help smoking-cessation programs.

## Additional training based on work class

Some of the activities considered Class I, II, III, or IV work under OSHA rules may also be considered, inherently or through physical alteration, friable-asbestos removal projects under DEQ/LRAPA rules. (See Work classification, Page 8 for work classification descriptions.)

For **Class I**, training must be equivalent in curriculum, method, and length to the EPA Model Accreditation Plan (MAP) asbestos abatement worker training (40 CFR 763, Subpart E, Appendix C). Eight hours of annual refresher training is required. DEQ accredits training providers to train and certify workers who perform friable-asbestos removal under the MAP.



For **Class II** work involving asbestos-containing material such as roofing, flooring, siding materials, ceiling tiles, or transite panels, training must include elements found in OAR 437-003-1926.1101(k)(9)(viii). This training will include hands-on training and last at least eight hours. Annual refresher is required; no duration is specified.

For **Class III** operations, training must be equivalent in curriculum and method to the 16-hour “Operations and Maintenance” course developed by EPA for maintenance and custodial workers whose work disturbs asbestos-containing materials (See 40 CFR 763.92). The course must include hands-on training in proper respirator use and work practices. Annual refresher training is required; no duration is specified.

For **Class IV** operations, training must be equivalent in curriculum and method to EPA awareness training.<sup>10</sup> Training must focus on locations of asbestos-containing or presumed asbestos-containing materials and ways to recognize damage and avoid exposure. The course must be at least two hours long. Annual refresher training is required; no duration is specified.

Employers must provide Oregon OSHA and the director of NIOSH all information and training materials upon request.

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<sup>10</sup> See OAR 437-003-1926.1101 for more information.



## Methods of compliance

### Control measures

For all covered work, employers must use the following control methods to comply with the PEL, STEL, and DEQ/LRAPA rules:

- Local exhaust ventilation equipped with HEPA-filter<sup>11</sup> dust collection systems
- Enclosure or isolation of processes producing asbestos dust
- Ventilation of the regulated area to move contaminated air away from the employees' breathing zone and toward a filtration or collection device equipped with a HEPA filter
- Engineering and work practice controls to reduce exposure to the lowest possible levels, supplemented by respirators to reach the PEL or STEL or lower
- File a notification with DEQ/LRAPA
- Use waste shipment form for waste transport

Employers must use the following engineering controls and work practices for all operations, regardless of exposure levels:

- Vacuum cleaners equipped with HEPA filters to collect all asbestos-containing or presumed asbestos-containing debris and dust
- Wet methods or wetting agents to control employee exposures, except when wetting methods would cause electrical hazards, equipment malfunction, slipping hazards, or other hazards
- Prompt cleanup and disposal of asbestos-contaminated waste and debris in leak-tight containers

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<sup>11</sup> High-efficiency particulate air (HEPA) filter capable of trapping and retaining at least 99.97 percent of all mono-dispersed particles of 0.3 micrometers in diameter.

The following work practices and engineering controls are prohibited for all asbestos-related work or work that disturbs asbestos or presumed asbestos-containing materials, regardless of measured exposure levels or the results of initial exposure assessments:

- High-speed abrasive disc saws not equipped with a point-of-cut ventilator or enclosure with HEPA-filtered exhaust air, DEQ/LRAPA will not allow outside containment
- Compressed air to remove asbestos or asbestos-containing materials unless the compressed air is used with an enclosed ventilation system
- Dry sweeping, shoveling, or other dry cleanup of dust and debris
- Employee rotation to reduce exposure
- Open accumulation of friable asbestos materials or asbestos containing waste
- Disposal at an unpermitted site

Oregon OSHA's asbestos standard established specific work practices for each class of asbestos work in construction.

### **Class I work**

A designated competent person must supervise all Class I work, including installing and operating the control system. The DEQ-licensed supervisor must be on site if more than three linear or three square feet of material is removed. Employers must place barriers over all openings to regulated areas or use another barrier or isolation method to prevent airborne asbestos from migrating for the following:

- Class I jobs removing more than 25 linear feet or 10 square feet of thermal insulation or surfacing material
- Other Class I jobs without negative exposure assessments
- Areas adjacent to a Class I regulated area where employees are working

Otherwise, employers must perform perimeter-area surveillance during each work shift. No asbestos dust should be visible. Perimeter monitoring must show that clearance levels are met (as contained in 40 CFR 763, Subpart E of the "EPA Asbestos in Schools" rule) or that perimeter-area levels are not higher than background levels.

For all Class I jobs:

- HVAC systems must be isolated in the regulated area by sealing with a double layer of 6-mil plastic or the equivalent.
- Impermeable drop cloths must be placed on surfaces beneath all removal activity.

- All objects within the regulated area must be covered with secured Impermeable drop cloths or plastic sheeting.
- For jobs without a negative exposure assessment or where exposure monitoring shows the PEL is exceeded, employers must ventilate the regulated area to move the contaminated air away from the employee breathing zone and toward a HEPA filtration or collection device. DEQ/LRAPA will not allow alternatives to the negative pressure enclosure requirements for removing friable asbestos material, unless written approval is granted.

In addition, employees performing Class I work must use one or more of the following control methods (For the specifications, limitations, and recommended work practices of these required control methods, refer to Occupational Exposure to Asbestos, OAR 437-003-1926.1101):

- Negative-pressure enclosure systems must be used when the configuration of the work area makes it impossible to erect an enclosure.
- Glove bag systems can be used to remove asbestos-containing or presumed asbestos-containing materials from straight runs of piping.
- Negative-pressure glove bag systems can be used to remove asbestos containing or presumed asbestos-containing materials from piping.
- Negative-pressure glove box systems can be used to remove asbestos-containing or presumed asbestos-containing materials from pipe runs.
- Water spray process systems may be used to remove asbestos-containing or presumed asbestos-containing materials from cold-line piping if employees carrying out the process have completed a 40-hour training course on its use in addition to training required for all employees performing Class I work.
- A walk-in enclosure that accommodates no more than two people (mini-enclosure) may be used if the disturbance or removal can be completely contained by the enclosure.

Employers may use different or modified engineering and work-practice controls if the following provisions are met (DEQ/LRAPA must approve all alternatives in writing):

- The control method encloses, contains, or isolates the process or source of airborne asbestos dust or captures and redirects the dust before it enters into the employees' breathing zone.
- A certified industrial hygienist or licensed professional engineer qualified as a project designer evaluates work area, work practices, and engineering controls. That person must certify, in writing, that the planned control method adequately reduces direct and indirect employee exposure to or below PEL under worst-case conditions. The planned control method must also prevent asbestos contamination outside the regulated area. This must be determined by samplings meeting the requirements of the "EPA Asbestos in Schools" rule or perimeter monitoring.

## Class II work

The competent person must supervise all Class II work. The DEQ-licensed supervisor must be on site if more than three linear or three square feet of material is removed.

Employers must use critical barriers over all openings to the regulated area or another barrier or isolation method to prevent airborne asbestos from migrating for the following:

- All indoor Class II jobs without a negative exposure assessment
- Situations where changing conditions indicate exposure above the PEL
- Situations where asbestos-containing materials are not removed substantially intact

Otherwise, employers must perform perimeter-area monitoring to verify that the barrier works properly. Impermeable drop cloths must be placed on all surfaces beneath removal activities.

All Class II asbestos work can use the same work practices and requirements as Class I asbestos jobs. Alternatively, Class II work can be performed more easily using simple work practices set out in the standard for specific jobs. DEQ/LRAPA requires approval in writing for any alternative that involves removal of friable asbestos material or any material that may become friable when physically altered during the removal process.

When friable vinyl and asphalt flooring materials that are covered by the asbestos standards, including mastic and backing materials, must be removed, DEQ/LRAPA requires that the removal is performed only by an Oregon-licensed abatement contractor, unless it is verified as asbestos-free by an industrial hygienist. When these materials are removed, employers must ensure employees:

- Do not sand flooring or its backing.
- Do not rip up resilient sheeting.
- Do not dry sweep.
- Do not use mechanical chipping unless performed in a negative-pressure enclosure.

Employers must ensure employees do:

- Use vacuums equipped with HEPA filters to clean floors.
- Use wet methods when removing resilient sheeting by cutting.
- Use wet methods to scrape residual adhesives and/or backing.
- Remove tiles intact, unless impossible.
- Omit wetting if tiles are heated and removed intact.
- File a notification with DEQ/LRAPA for a friable asbestos abatement.
- Package and dispose of asbestos waste in accordance with DEQ/LRAPA rules.

To remove asbestos-containing roofing materials, employers must ensure that employees do the following:

- Remove them intact.
- Use wet methods when possible.
- Continuously mist cutting machines during use, unless the competent person determines misting to be unsafe.
- Immediately HEPA-vacuum all loose dust along the cut.
- Use a crane, hoist, or dust-tight chute to lower all unwrapped or unbagged roofing materials to the ground as soon as possible or by the end of the workshift.
- Transfer unwrapped materials to a closed receptacle to prevent dispersing the dust when lowered.
- Isolate roof-level heating and ventilation air intake sources or shut down the ventilation system.

DEQ/LRAPA considers asbestos-containing felt and paper friable; they must be removed by a licensed asbestos abatement contractor with certified workers .

When removing cementitious asbestos-containing siding and shingles or transite panels, employers must ensure that employees do not cut, abrade, or break siding, shingles, or transite panels unless methods less likely to result in asbestos fiber release cannot be used.



Employers must ensure that employees do the following:

- Spray each panel or shingle with amended water<sup>12</sup> before removing.
- Use a crane, hoist, or dust-tight chute to lower all unwrapped or unbagged panels or shingles to the ground as soon as possible or by the end of the workshift.
- Lower all properly bagged or wrapped panels or shingles in a manner that will not break, chip, or make the panels or shingles friable.
- Cut nails with flat, sharp instruments.
- File a notification with DEQ/LRAPA.
- Dispose of asbestos waste at a permitted landfill.

When removing asbestos-containing gaskets, employers must ensure that employees:

- Remove gaskets within glove bags if they are visibly deteriorated and unlikely to be removed intact.
- Thoroughly wet the gaskets with amended water before removing.
- Immediately place the wet gaskets in a disposal container.
- Scrape, using wet methods to remove residue.
- File a notification with DEQ/LRAPA.
- Dispose of asbestos waste at a permitted landfill.

For removal of any other Class II asbestos-containing material, employers must ensure employees do not cut, abrade, or break the material. Employers must ensure that employees do the following:

- Thoroughly wet the material with amended water before and during removal.
- Remove the material intact, if possible.
- Immediately bag or wrap removed asbestos-containing materials or keep them wet until transferred to a closed receptacle at the end of the work shift.

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<sup>12</sup> Water to which surfactant (a wetting agent) has been added to increase the ability of the liquid to penetrate an asbestos-containing material.

Employers may use different or modified engineering and work-practice controls if either of the following are true (DEQ/LRAPA must give approval in writing for such alternatives):

- They can demonstrate by employee exposure data that, during the use of such methods and under similar conditions, employee exposure will not exceed the PEL under any anticipated circumstance.
- The competent person evaluates the work area, the projected work practices, and the engineering controls and certifies in writing that they will reduce all employee exposure to below the PEL under expected conditions. The evaluation must be based on exposure data for conditions closely resembling those of the current job and for employees with equivalent training and experience.

### **Class III work**

Employers must use wet methods and local exhaust ventilation when feasible during Class III work. Where drilling, cutting, abrading, sanding, chipping, breaking, or sawing thermal insulation or surfacing material occurs, employers must use impermeable drop cloths as well as mini-enclosures, glove bag systems, or other effective isolation methods. Where a negative exposure assessment does not exist or monitoring shows the PEL is exceeded, employers must contain the area with impermeable drop cloths and plastic barriers or other isolation methods and ensure that employees wear respirators. DEQ/LRAPA allow maintenance activities only where less than three linear feet or three square feet of asbestos removal takes place as part of a needed repair operation.

### **Class IV work**

Employees conducting Class IV asbestos work must have attended an asbestos-awareness training program. Employees must use wet methods and HEPA vacuums to promptly clean asbestos-containing or presumed asbestos-containing debris. When cleaning debris and waste in regulated areas, employees must wear respirators. In areas where thermal insulation or surfacing material is present, employees must assume that all waste and debris contain asbestos. DEQ/LRAPA allow maintenance activities only where less than three linear feet or three square feet of asbestos removal takes place as part of a needed repair operation.



## Respiratory protection

Respirators must be used for the following:

- Class I asbestos jobs
- Class II work where an asbestos-containing material is not removed substantially intact
- Class II and III work not using wet methods
- Class II and III work without a negative exposure assessment
- Class III jobs where asbestos-containing or presumed asbestos-containing thermal insulation or surfacing material is cut, abraded, or broken
- Class IV work within a regulated area where respirators are required
- Work during which employees are exposed above the PEL or STEL and in emergencies

Employers must provide respirators at no cost to employees, selecting the appropriate type from among those approved by the Mine Safety and Health Administration (MSHA) and NIOSH.

In Class I regulated areas where a negative-exposure assessment has not been done or can't be done, but exposure levels do not exceed 1 f/cc as an eight-hour time-weighted average, all employees must be provided with one of the following:

- A tight-fitting powered air-purifying respirator equipped with high-efficiency filters
- A full-facepiece supplied-air respirator operated in the pressure-demand mode equipped with an auxiliary positive pressure self-contained breathing apparatus

In addition to the above, if levels do exceed 1 f/cc as an eight-hour time-weighted average in the Class I regulated area, all employees must be provided with a full-facepiece supplied-air respirator operated in the pressure-demand mode equipped with an auxiliary positive-pressure self-contained breathing apparatus.

For all other Class II, III, or IV work where levels may exceed the 0.1 f/cc PEL or 1 f/cc STEL, use the table below to choose the appropriate level of respiratory protection.



Airborne concentrations of asbestos or conditions of use	Required respirator
<ul style="list-style-type: none"> <li>• Not in excess of 1 f/cc (10 X PEL), or otherwise as required independent of exposure pursuant to paragraph (h)(2)(iv) of this section.</li> </ul>	<ul style="list-style-type: none"> <li>• Half-mask air-purifying respirator, other than a disposable respirator, equipped with high-efficiency filters</li> </ul>
<ul style="list-style-type: none"> <li>• Not in excess of 5 f/cc (50 X PEL)</li> </ul>	<ul style="list-style-type: none"> <li>• Full-facepiece air-purifying respirator equipped with high-efficiency filters</li> </ul>
<ul style="list-style-type: none"> <li>• Not in excess of 10 f/cc (100 X PEL)</li> </ul>	<ul style="list-style-type: none"> <li>• Any powered air-purifying respirator equipped with high-efficiency filters or any supplied-air respirator operated in continuous flow mode</li> </ul>
<ul style="list-style-type: none"> <li>• Not in excess of 100 f/cc (1,000 X PEL)</li> </ul>	<ul style="list-style-type: none"> <li>• Full-facepiece supplied-air respirator operated in pressure-demand mode</li> </ul>
<ul style="list-style-type: none"> <li>• Greater than 100 f/cc (&gt;1,000 X PEL) or unknown, concentration</li> </ul>	<ul style="list-style-type: none"> <li>• Full-facepiece supplied-air respirator operated in pressure-demand mode equipped with an auxiliary positive-pressure self-contained breathing apparatus</li> </ul>

Employers must institute a respiratory program in accordance with Respiratory Protection, OAR 437-002-1910.134. Employers must permit employees using filter respirators to change the filters when breathing resistance increases; employers must maintain an adequate supply of filters. Employers must permit employees wearing respirators to leave work areas to wash their faces and respirator facepieces to prevent skin irritation.

Employers must ensure that respirators fit properly, with minimal facepiece leakage. For employees wearing negative-pressure respirators, employers must perform initial face-fit tests and at least annually thereafter. The qualitative fit tests can only be used for fit testing half-mask respirators (where permitted) or for full-facepiece air-purifying respirators (where they are worn at levels where half-facepiece air-purifying respirators are permitted). Employers must conduct qualitative and quantitative fit tests in accordance with Respiratory Protection (OAR 437-002-1910.134) and use the tests to select facepieces that provide the required protection.

Employers must not assign any employee to tasks requiring respirator use if physical exams and the examining physician’s recommendations show that he or she would be unable to function normally while using a respirator. Employers must assign such employees to other jobs or give them the opportunity to transfer to different positions in the same geographical area and with the same seniority, status, pay rate, and job benefits, if such positions are available.

## Protective clothing

Employers must provide and require the use of protective clothing such as coveralls or similar whole-body clothing, head coverings, gloves, and foot coverings for the following:

- Any employee exposed to airborne asbestos exceeding the PEL or STEL
- Work without a negative-exposure assessment
- Any employee performing Class I work involving the removal of more than 25 linear feet or 10 square feet of asbestos-containing or presumed asbestos-containing thermal insulation or surfacing materials

Employers must launder contaminated clothing to prevent the release of airborne asbestos in excess of the PEL or STEL. Any employer who gives contaminated clothing to another person for laundering must inform him or her of the contamination.

Employers must transport contaminated clothing in sealed, impermeable bags, or other closed impermeable containers bearing appropriate labels. (See Labels, Page 18, for requirements.)

The competent person must examine employee worksuits at least once per workshift for rips or tears. Rips or tears found while the employee is working must be mended or replaced immediately.

## Hygiene facilities

### Decontamination requirements for Class I asbestos work

For employees performing Class I asbestos jobs involving more than 25 linear feet or 10 square feet of asbestos-containing or presumed asbestos-containing thermal insulation or surfacing materials, employers must create a decontamination area adjacent to and connected with the regulated area. Employees must enter and exit the regulated area through the decontamination area.

The decontamination area must be composed of an equipment room, shower area, and clean room in series. The equipment room must be supplied with impermeable, labeled bags and containers to store and dispose of contaminated protective equipment. Shower facilities must be adjacent to both the equipment and clean rooms, unless work is performed outdoors or this arrangement is impractical. If so, employers must ensure that employees remove asbestos contamination from their worksuits in the equipment room using a HEPA vacuum before proceeding to a shower nonadjacent to the work area or remove their contaminated worksuits in the equipment room, don clean worksuits, and proceed to a shower nonadjacent to the work area.

The clean room must have a locker or appropriate storage container for each employee unless work is performed outdoors or this arrangement is not possible. In such a case, employees may clean protective clothing with a portable HEPA vacuum before leaving the regulated area. Employees must change into street clothes in clean change areas.

Before entering the regulated area, employees must enter the decontamination area through the clean room, remove and deposit street clothing in a provided locker, and put on protective clothing and respiratory protection before leaving the clean area. To enter the regulated area, employees must pass through the equipment room.

Before exiting the regulated area, employees must remove all gross contamination and debris and then remove their protective clothing in the equipment room, depositing the clothing in labeled, impermeable bags or containers. Employees must shower before entering the clean room to change into street clothing.

When employees consume food or beverages at the Class I worksite, employers must provide lunch areas with airborne asbestos levels below the PEL, excursion limit, or both.

Decontamination requirements for other Class I, II, and III asbestos work without a negative-exposure assessment and where exposures exceed the PEL

Employers must establish an equipment area adjacent to the regulated area for the decontamination of employees and their equipment. The area must be covered by an impermeable drop cloth on the floor (or horizontal work surface) and must be large enough to accommodate equipment cleaning and personal protective equipment removal without spreading contamination beyond the area. Before removing work clothing, employees must clean it with a HEPA vacuum. All equipment and the surfaces of containers filled with asbestos-containing materials must be cleaned prior to removal. Employers must ensure employees enter and exit the regulated area through the equipment area.

## Decontamination requirements for Class IV work

Employers must ensure employees performing Class IV work within a regulated area comply with the hygiene practices required of employees performing work with higher classifications in that regulated area. Otherwise, employees cleaning up thermal system insulation or asbestos-containing debris must use decontamination facilities required for Class II and III work where exposure exceeds the PEL or no negative exposure assessment exists.

## Smoking

Employers must ensure that employees performing any class of asbestos work do not smoke in any work area with asbestos exposure.

## Housekeeping

Asbestos waste, scrap, debris, bags, containers, equipment, and contaminated clothing consigned for disposal must be collected and disposed of in sealed, labeled, impermeable bags or other closed, labeled impermeable containers. Employees must use HEPA-filtered vacuuming equipment and must empty it so as to minimize asbestos re-entry into the workplace.

All vinyl and asphalt flooring material must remain intact unless the building owner demonstrates that the flooring does not contain asbestos. Sanding flooring material is prohibited. Employees stripping finishes must use wet methods and low abrasion pads at speeds lower than 300 revolutions per minute. Burnishing or dry buffing may be done only on flooring with enough finish that the pad cannot contact the flooring material. Employees must not dust, sweep, or vacuum without a HEPA filter in an area containing thermal insulation or surfacing material or visibly deteriorated asbestos-containing materials. Employees must promptly clean and dispose of dust and debris in leak-tight containers.



Asbestos tiles dumped in a forest.

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# **Appendix —**

**quick reference of provisions by work type**

Provision	Class I	Class II	Class III	Class IV	DEQ/LRAPA Friable	DEQ/LRAPA Nonfriable
<b>Definition</b>	Removal of thermal insulation and surfacing materials	Removal of all other asbestos not thermal insulation or surfacing materials	Maintenance and repair operations disturbing asbestos-containing materials	Housekeeping and custodial operations (including construction site cleanup)	<b>Friable asbestos</b> material means any asbestos-containing material that hand pressure can crumble, pulverize, or reduce to powder when dry. Friable materials include, but are not limited to, thermal insulation, sheet vinyl, ceiling texture, boiler insulation, and any nonfriable material that is shattered, pulverized, or caused to release visible emissions. Remove and dispose of all asbestos material before any activity that would disturb the material or preclude access to it for future removal.	<b>Nonfriable asbestos</b> material means any asbestos-containing material that cannot be crumbled, pulverized, or reduced to powder by hand pressure. Nonfriable material includes, but is not limited to, vinyl tile cement siding and roofing or any other material that DEQ considers encased in a viable rigid matrix. Remove all nonfriable asbestos-containing material before any activity that would disturb the material, cause the release of asbestos fibers into the air, or preclude access to the materials for future removal.
<b>Regulated areas</b>	Required (signs required)	Required (signs required)	Required (signs required)	Required (signs required)	Required for all projects (viewing windows required)	OSHA requirements apply
<b>Competent person</b>	<b>Required on site:</b> <ul style="list-style-type: none"> <li>Inspect each workshift</li> <li>Contractor and supervisor training required</li> </ul>	<b>Required on site:</b> <ul style="list-style-type: none"> <li>Inspect often</li> <li>Contractor and supervisor training required</li> </ul>	<b>Required on site:</b> <ul style="list-style-type: none"> <li>Inspect often</li> <li>Operations and maintenance training required</li> </ul>	<b>Required on site:</b> <ul style="list-style-type: none"> <li>Inspect often</li> <li>Operations and maintenance training required</li> </ul>	All workers and supervisors must be certified by DEQ. All asbestos contractors must have a DEQ license and each friable project must have a supervisor.	OSHA requirements apply
<b>Air monitoring</b>	<b>Initial if no negative-exposure assessment (NEA)</b> <ul style="list-style-type: none"> <li>Daily if no NEA</li> <li>Terminate if &lt;permissible exposure limit (PEL)</li> <li>Additional if conditions change</li> </ul>	<b>Initial if no NEA</b> <ul style="list-style-type: none"> <li>Daily if no NEA</li> <li>Terminate if &lt;PEL</li> <li>Additional if conditions change</li> </ul>	<b>Initial if no NEA</b> <ul style="list-style-type: none"> <li>Periodic to accurately predict if &gt;PEL</li> <li>Terminate if &lt;PEL</li> <li>Additional if conditions change</li> </ul>		Air clearances upon completion of a friable asbestos project by a person independent of the abatement contractor when more than 260 linear feet or 160 square feet of asbestos is removed within negative-pressure containment.	OSHA requirements apply

Provision	Class I	Class II	Class III	Class IV	DEQ/LRAPA Friable	DEQ/LRAPA Nonfriable
<b>Medical surveillance</b>	<b>Required if:</b> <ul style="list-style-type: none"> <li>Wearing negative-pressure respirator</li> <li>&gt;PEL</li> <li>&gt;30 days exposure per year</li> </ul>	<b>Required if:</b> <ul style="list-style-type: none"> <li>Wearing negative-pressure respirator</li> <li>&gt;PEL</li> <li>&gt;30 days exposure per year</li> </ul>	<b>Required if:</b> <ul style="list-style-type: none"> <li>Wearing negative-pressure respirator</li> <li>&gt;PEL</li> <li>&gt;30 days exposure per year</li> </ul>	<b>Required if:</b> <ul style="list-style-type: none"> <li>Wearing negative-pressure respirator</li> <li>&gt;PEL</li> </ul>	OSHA requirements apply	OSHA requirements apply
<b>Respirators</b>	Mandatory for all Class I jobs	<b>Mandatory if:</b> <ul style="list-style-type: none"> <li>Nonintact removal</li> <li>No NEA</li> <li>&gt;PEL</li> <li>Dry removal (except for roofing)</li> <li>In emergencies</li> </ul>	<b>Half-mask air-purifying respirator minimum if:</b> <ul style="list-style-type: none"> <li>No NEA</li> <li>Thermal insulation or surfacing materials disturbed</li> <li>&gt;PEL</li> </ul> <b>Mandatory if:</b> <ul style="list-style-type: none"> <li>Dry removal (except for roofing)</li> <li>In emergencies</li> </ul>	<b>Mandatory if:</b> <ul style="list-style-type: none"> <li>In regulated area where required</li> <li>If &gt;PEL</li> <li>In emergencies</li> </ul>	OSHA requirements apply	OSHA requirements apply
<b>Protective clothing and equipment</b>	<b>Required for all jobs if:</b> <ul style="list-style-type: none"> <li>&gt;25 linear feet or 10 square feet of thermal insulation or surfacing materials removal</li> <li>No NEA</li> <li>&gt;PEL</li> </ul>	<b>Required for all jobs if:</b> <ul style="list-style-type: none"> <li>No NEA</li> <li>&gt;PEL</li> </ul>	<b>Required for all jobs if:</b> <ul style="list-style-type: none"> <li>No NEA</li> <li>&gt;PEL</li> </ul>	<b>Required for all jobs if:</b> <ul style="list-style-type: none"> <li>No NEA</li> <li>&gt;PEL</li> </ul>	OSHA requirements apply	OSHA requirements apply
<b>Training</b>	Equivalent to <b>Asbestos Hazard Emergency Response Act</b> (AHERA) worker training	See (k)(9)(iii) & (k)(9)(iv)	Equivalent to AHERA operations and maintenance course	Equivalent to AHERA awareness training	Training required by a DEQ accredited trainer	OSHA competent person requirements apply

Provision	Class I	Class II	Class III	Class IV	DEQ/LRAPA Friable	DEQ/LRAPA Nonfriable
<b>Decontamination procedures</b>	<p><b>Full decon unit required if &gt;25 linear feet or 10 square feet of thermal insulation or surfacing materials removal:</b></p> <ul style="list-style-type: none"> <li>• Connected shower/clean room required</li> <li>• Vacuum, change, shower elsewhere</li> <li>• Detailed procedures</li> </ul> <p>Lunch area required</p> <p><b>if &lt;25 linear feet or 10 square feet of thermal insulation or surfacing materials removal or &gt;PEL or no NEA:</b></p> <ul style="list-style-type: none"> <li>• Equipment room/area required</li> <li>• Drop cloths required</li> <li>• Area must accommodate cleanup</li> <li>• Must decontaminate all personal protective equipment</li> <li>• Must enter regulated area through equipment room/decon area</li> <li>• No smoking in work area</li> </ul>	<p><b>If &gt;PEL or no NEA:</b></p> <ul style="list-style-type: none"> <li>• Equipment room/area required</li> <li>• Drop cloths required</li> <li>• Area must accommodate cleanup</li> <li>• Must decontaminate all personal protective equipment</li> <li>• Must enter regulated area through equipment room/decon area</li> </ul> <p>No smoking in work area</p>	<p><b>If &gt;PEL or no NEA:</b></p> <ul style="list-style-type: none"> <li>• Equipment room/area required</li> <li>• Drop cloths required</li> <li>• Area must accommodate cleanup</li> <li>• Must decontaminate all personal protective equipment</li> <li>• Must enter regulated area through equipment room/decon area</li> </ul> <p><b>If NEA, must vacuum</b></p> <p>No smoking in work area</p>	<p><b>If &gt;PEL or no NEA:</b></p> <ul style="list-style-type: none"> <li>• Equipment room/area required</li> <li>• Drop cloths required</li> <li>• Area must accommodate cleanup</li> <li>• Must decontaminate all personal protective equipment</li> <li>• Must enter regulated area through equipment room/decon area</li> </ul> <p>No smoking in work area</p>	OSHA requirements apply	OSHA requirements apply
<b>Required work practices and engineering controls</b>	<ul style="list-style-type: none"> <li>• Wet methods</li> <li>• HEPA vacuum</li> <li>• Prompt cleanup/disposal</li> </ul>	<ul style="list-style-type: none"> <li>• Wet methods</li> <li>• HEPA vacuum</li> <li>• Prompt cleanup/disposal</li> </ul>	<ul style="list-style-type: none"> <li>• Wet methods</li> <li>• HEPA vacuum</li> <li>• Prompt cleanup/disposal</li> </ul>	<ul style="list-style-type: none"> <li>• Wet methods</li> <li>• HEPA vacuum</li> <li>• Prompt cleanup/disposal</li> </ul>	<ul style="list-style-type: none"> <li>• Wet methods</li> <li>• HEPA equipment</li> <li>• Prompt cleanup</li> <li>• Disposal at an authorized landfill</li> </ul>	<ul style="list-style-type: none"> <li>• Wet methods</li> <li>• HEPA equipment</li> <li>• Prompt cleanup</li> <li>• Disposal at an authorized landfill</li> </ul>



Provision	Class I	Class II	Class III	Class IV	DEQ/LRAPA Friable	DEQ/LRAPA Nonfriable
<b>Required work practices and engineering controls to comply with PEL</b>	<ul style="list-style-type: none"> <li>• HEPA local exhaust</li> <li>• Enclosure</li> <li>• Directed ventilation</li> <li>• Other work practices</li> <li>• Supplement with respirators</li> </ul>	<ul style="list-style-type: none"> <li>• HEPA local exhaust</li> <li>• Enclosure</li> <li>• Directed ventilation</li> <li>• Other work practices</li> <li>• Supplement with respirators</li> </ul>	<ul style="list-style-type: none"> <li>• HEPA local exhaust</li> <li>• Enclosure</li> <li>• Directed ventilation</li> <li>• Other work practices</li> <li>• Supplement with respirators</li> </ul>	<ul style="list-style-type: none"> <li>• HEPA local exhaust</li> <li>• Enclosure</li> <li>• Directed ventilation</li> <li>• Other work practices</li> <li>• Supplement with respirators</li> </ul>	<ul style="list-style-type: none"> <li>• Wet methods</li> <li>• HEPA equipment</li> <li>• Prompt cleanup</li> <li>• Disposal at an authorized landfill</li> </ul>	<ul style="list-style-type: none"> <li>• Wet methods</li> <li>• Remove intact</li> <li>• Prompt cleanup</li> <li>• Disposal at an authorized landfill</li> </ul>
<b>Prohibited work practices and engineering controls</b>	<ul style="list-style-type: none"> <li>• High-speed abrasive disc saws without HEPA</li> <li>• Compressed air without capture device</li> <li>• Dry sweeping/shoveling</li> <li>• Employee rotation</li> </ul>	<ul style="list-style-type: none"> <li>• High-speed abrasive disc saws without HEPA</li> <li>• Compressed air without capture device</li> <li>• Dry sweeping/shoveling</li> <li>• Employee rotation</li> </ul>	<ul style="list-style-type: none"> <li>• High-speed abrasive disc saws without HEPA</li> <li>• Compressed air without capture device</li> <li>• Dry sweeping/shoveling</li> <li>• Employee rotation</li> </ul>	<ul style="list-style-type: none"> <li>• High-speed abrasive disc saws without HEPA</li> <li>• Compressed air without capture device</li> <li>• Dry sweeping/shoveling</li> </ul>	<ul style="list-style-type: none"> <li>• Employee rotation</li> <li>• Dry removal</li> <li>• Open storage or accumulation of friable asbestos materials or asbestos-containing waste material</li> <li>• Disposal at a site not authorized to handle asbestos waste</li> </ul>	<ul style="list-style-type: none"> <li>• Dry removal</li> <li>• Open storage or accumulation of friable asbestos materials or asbestos-containing waste material</li> <li>• Disposal at a site not authorized to handle asbestos waste</li> </ul>
<b>Controls and work practices</b>	<p><b>Critical barriers/isolation methods required if:</b></p> <ul style="list-style-type: none"> <li>• &gt;25 linear feet or 10 square feet of thermal insulation or surfacing materials removal</li> <li>• &lt;25 linear feet or 10 square feet of thermal insulation or surfacing materials removal only if no NEA or adjacent workers</li> <li>• HVAC isolation required</li> <li>• Drop cloths required</li> <li>• Directed ventilation required if no NEA or &gt;PEL</li> </ul>	<p><b>For indoor work only:</b></p> <ul style="list-style-type: none"> <li>• Critical barriers/isolation methods required if: <ul style="list-style-type: none"> <li>- no NEA</li> <li>- likely &gt;PEL</li> <li>- nonintact removal</li> </ul> </li> <li>• Drop cloths required</li> </ul> <p><b>If &gt;PEL, must use:</b></p> <ul style="list-style-type: none"> <li>• Local HEPA exhaust</li> <li>• Process isolation</li> <li>• Directed ventilation controls supplemented with respirators</li> </ul>	<p><b>Critical barriers required if:</b></p> <ul style="list-style-type: none"> <li>- no NEA</li> <li>- PEL via monitoring</li> <li>• Drop cloths required</li> <li>• Local HEPA exhaust required</li> </ul> <p><b>Enclosure or isolation of operation required if:</b></p> <ul style="list-style-type: none"> <li>• TSI or SM is drilled, cut, abraded, sanded, sawed, or chipped</li> </ul>	See Required Work Practices and Engineering Controls	<ul style="list-style-type: none"> <li>• File DEQ notification and fee</li> <li>• Negative-pressure containment</li> <li>• Disposal packaging</li> <li>• Waste shipment form</li> </ul>	<ul style="list-style-type: none"> <li>• File DEQ notification and fee</li> <li>• Follow DEQ guidance</li> <li>• Waste shipment form suggested</li> </ul>
	Class I and II continue on page 42-43					

Provision	Class I	Class II	Class III	Class IV	DEQ/LRAPA Friable	DEQ/LRAPA Nonfriable
<p>Controls and work practices (continued)</p>	<p>Also, one or more of the following controls must be used:</p> <ul style="list-style-type: none"> <li>• Negative-pressure enclosure</li> <li>• Glove bag for straight runs of pipe</li> <li>• Negative-pressure glove bag for pipe runs</li> <li>• Negative-pressure glove box for pipe runs</li> <li>• Water spray process</li> <li>• Mini-enclosure</li> </ul>	<p>For removal of vinyl and asphalt flooring materials:</p> <ul style="list-style-type: none"> <li>• No sanding</li> <li>• HEPA vacuum</li> <li>• Wet methods</li> <li>• No dry sweeping</li> <li>• Chipping done in negative-pressure enclosure</li> <li>• Intact removal, if possible</li> <li>• Dry heat removal allowed</li> <li>• Assume contains asbestos without an analysis</li> </ul> <p>For removal of built-up roofing materials or asbestos-cement shingles:</p> <ul style="list-style-type: none"> <li>• Intact removal, if possible</li> <li>• HEPA vacuum</li> <li>• Wet methods, if feasible</li> <li>• Cutting machine misting</li> <li>• HEPA-vacuum debris</li> <li>• Lower by day's end</li> <li>• Control dust of unbagged material</li> <li>• Roof vent system protected</li> </ul>				

Provision	Class I	Class II	Class III	Class IV	DEQ/LRAPA Friable	DEQ/LRAPA Nonfriable
Controls and work practices (continued)		<p><b>For removal of cementitious siding, shingles, or transite panels:</b></p> <ul style="list-style-type: none"> <li>• Intact removal, if possible</li> <li>• Wet methods</li> <li>• Lower in dust-tight chute by day's end</li> <li>• Cut nail heads</li> </ul> <p><b>For removal of gaskets:</b></p> <ul style="list-style-type: none"> <li>• Use glove bags if not intact</li> <li>• Wet removal</li> <li>• Prompt disposal</li> <li>• Wet scraping</li> </ul> <p><b>Additional requirements:</b></p> <ul style="list-style-type: none"> <li>• Wet methods</li> <li>• Intact removal, if possible</li> <li>• Cutting, abrading, or breaking prohibited</li> </ul>				

# Oregon OSHA Services

**Oregon OSHA offers a wide variety of safety and health services to employers and employees:**

## Appeals

**503-947-7426; 800-922-2689; [admin.web@oregon.gov](mailto:admin.web@oregon.gov)**

- Provides the opportunity for employers to hold informal meetings with Oregon OSHA on concerns about workplace safety and health.
- Discusses Oregon OSHA's requirements and clarifies workplace safety or health violations.
- Discusses abatement dates and negotiates settlement agreements to resolve disputed citations.

## Conferences

**503-378-3272; 888-292-5247, Option 1; [oregon.conferences@oregon.gov](mailto:oregon.conferences@oregon.gov)**

- Co-hosts conferences throughout Oregon that enable employees and employers to learn and share ideas with local and nationally recognized safety and health professionals.

## Consultative Services

**503-378-3272; 800-922-2689; [consult.web@oregon.gov](mailto:consult.web@oregon.gov)**

- Offers no-cost, on-site safety and health assistance to help Oregon employers recognize and correct workplace safety and health problems.
- Provides consultations in the areas of safety, industrial hygiene, ergonomics, occupational safety and health programs, assistance to new businesses, the Safety and Health Achievement Recognition Program (SHARP), and the Voluntary Protection Program (VPP).

## Enforcement

**503-378-3272; 800-922-2689; [enforce.web@oregon.gov](mailto:enforce.web@oregon.gov)**

- Offers pre-job conferences for mobile employers in industries such as logging and construction.
- Inspects places of employment for occupational safety and health hazards and investigates workplace complaints and accidents.
- Provides abatement assistance to employers who have received citations and provides compliance and technical assistance by phone.

## Public Education

**503-947-7443; 888-292-5247, Option 2; [ed.web@oregon.gov](mailto:ed.web@oregon.gov)**

- Provides workshops and materials covering management of basic safety and health programs, safety committees, accident investigation, technical topics, and job safety analysis.

## Standards and Technical Resources

**503-378-3272; 800-922-2689; [tech.web@oregon.gov](mailto:tech.web@oregon.gov)**

- Develops, interprets, and gives technical advice on Oregon OSHA's safety and health rules.
- Publishes safe-practices guides, pamphlets, and other materials for employers and employees
- Manages the Oregon OSHA Resource Center, which offers safety videos, books, periodicals, and research assistance for employers and employees.

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**Need more information? Call your nearest Oregon OSHA office.**

### Salem Central Office

350 Winter St. NE  
Salem, OR 97301-3882

**Phone:** 503-378-3272

Toll-free: 800-922-2689

**Fax:** 503-947-7461

**en Español:** 800-843-8086

**Website:** [osha.oregon.gov](http://osha.oregon.gov)

### Bend

Red Oaks Square  
1230 NE Third St., Suite A-115  
Bend, OR 97701-4374

541-388-6066

*Consultation:* 541-388-6068

### Eugene

1140 Willagillespie, Suite 42  
Eugene, OR 97401-2101

541-686-7562

*Consultation:* 541-686-7913

### Medford

1840 Barnett Road, Suite D  
Medford, OR 97504-8250

541-776-6030

*Consultation:* 541-776-6016

### Pendleton

200 SE Hailey Ave.  
Pendleton, OR 97801-3056  
541-276-9175

*Consultation:* 541-276-2353

### Portland

Durham Plaza  
16760 SW Upper Boones Ferry Road,  
Suite 200

Tigard, OR 97224-7696

503-229-5910

*Consultation:* 503-229-6193

### Salem

1340 Tandem Ave. NE, Suite 160  
Salem, OR 97301

503-378-3274

*Consultation:* 503-373-7819



## DEQ/LRAPA offices

Copies of the DEQ rules; guidance documents; fact sheets; laboratory, abatement contractor and landfill lists; project notification and waste shipment report forms; and other asbestos information can be found on DEQ's Web page at [www.deq.state.or.us/aq/asbestos](http://www.deq.state.or.us/aq/asbestos).

For further information about the DEQ/LRAPA asbestos requirements, contact one of the offices listed below:

- For Clackamas, Clatsop, Columbia, Multnomah, Tillamook, and Washington counties, call the Northwest Region Portland office at **503-229-5982**, **503-229-5364** or **800-452-4011 (toll-free)**
- For Benton, Lincoln, Linn, Marion, Polk, and Yamhill counties, call the Salem office at **503-378-5086** or **800-349-7677 (toll-free)**.
- For Lane County, call the Lane Regional Air Protection Agency at **541-736-1056**.
- For Jackson, Josephine, and Eastern Douglas counties, call the Medford office at **541-776-6107** or **877-823-3216 (toll-free)**.
- For Coos, Curry, and Western Douglas counties, call the Coos Bay office at **541-269-2721, ext. 222**.
- For Crook, Deschutes, Harney, Hood River, Jefferson, Klamath, Lake, Sherman and Wasco counties, call the Bend office at **541-633-2019** or **866-863-6668 (toll-free)**.
- For Baker, Gilliam, Grant, Malheur, Morrow, Umatilla, Union, Wallowa and Wheeler counties, call the Pendleton office at **541-278-4626**, or **800-304-3513 (toll-free)**.





A Division of the  
Department of Consumer  
and Business Services



State of Oregon  
Department of  
Environmental  
Quality

440-2129 (8/16) OR-OSHA