

PSU Asbestos Management Plan

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1.0 Purpose

The purpose of this Asbestos Management Plan is to outline work practices to minimize the potential exposure to asbestos-containing materials during demolition, maintenance, and renovation activities. This plan outlines steps to ensure that employees who work with and around asbestos-containing materials are not exposed to hazardous levels of asbestos and steps to monitor, control, and document employee exposures to respirable asbestos.

This Asbestos Management Plan is intended as a summary of the Oregon Occupational Safety and Health Administration (OR-OSHA) General Industry Asbestos standard (OAR 437, Division 2, Subdivision Z, Asbestos). There are separate Oregon Department of Environmental Quality (DEQ) regulations for the removal and disposal of asbestos-containing materials, which are applicable for larger scale projects impacting asbestos-containing materials.

2.0 Scope

The following plan applies to all work which may impact known or suspected asbestos-containing building materials. Appendix A contains a partial list of potentially asbestos-containing material. All employees who perform tasks which have a potential to disturb ACM, including removal, repair, alteration, or cleaning are covered by and required to read the plan, and participate annually in PSU Environmental Health and Safety's (EHS) asbestos training.

3.0 Definitions

Aggressive method means removal or disturbance of building material by sanding, abrading, grinding or other method that breaks, crumbles, or disintegrates intact ACM.

Aggressive Final Clearance means a final collection of air samples where floors, ceiling, and walls are swept with the exhaust of a one (1) horsepower leaf blower to dislodge any remaining dust and stationary fans are used (one for each 10,000 ft³ of worksite) to direct air toward the ceiling to create a "worst case" sampling scenario.

Amended water means water to which surfactant (wetting agent) has been added to increase the ability of the liquid to penetrate ACM.

Asbestos includes chrysotile, amosite, crocidolite, tremolite asbestos, anthophyllite asbestos, actinolite asbestos, and any of these minerals that has been chemically treated and/or altered. For purposes of this standard, asbestos includes PACM, as defined below.

Asbestos-containing material (ACM), means any material containing more than one percent asbestos.

Class I asbestos work means activities involving the removal of thermal system insulation and surfacing ACM and PACM.

Class II asbestos work means activities involving the removal of ACM which is not thermal system insulation or surfacing material. This includes, but is not limited to, the removal of asbestos-containing wallboard, floor tile and sheeting, roofing and siding shingles, and construction mastics.

Class III asbestos work means repair and maintenance operations, where ACM, including TSI and surfacing ACM and PACM, is likely to be disturbed.

Class IV asbestos work means maintenance and custodial activities during which employees contact but do not disturb ACM or PACM and activities to clean up dust, waste and debris resulting from Class I, II, and III activities.

Critical barrier means one or more layers of plastic sealed over all openings into a work area or any other similarly placed physical barrier sufficient to prevent airborne asbestos in a work area from migrating to an adjacent area.

Decontamination area means an enclosed area adjacent and connected to the regulated area and consisting of an equipment room, shower area, and clean room, which is used for the decontamination of workers, materials, and equipment that are contaminated with asbestos.

Disturbance means activities that disrupt the matrix of ACM or PACM, crumble or pulverize ACM or PACM, or generate visible debris from ACM or PACM.

Employee exposure means that exposure to airborne asbestos that would occur if the employee were not using respiratory protective equipment.

Enclosure means an airtight, impermeable barrier designed to prevent the release of asbestos fibers into the air.

Environmental Protection Agency (EPA) is an agency of the U.S. federal government which was created for the purpose of protecting human health and the environment by writing and enforcing regulations based on laws passed by Congress.

Excursion limit (EL) is the maximum allowable exposure to asbestos at 1.0 fibers per cubic centimeter of air as averaged over a sampling period of thirty (30) minutes.

Fiber means a particulate form of asbestos, 5 micrometers or longer, with a length-to-diameter ratio of at least 3 to 1.

Friable means material that when dry, may be crumbled, pulverized, or reduced to powder by hand pressure.

Glove bag means a no larger than 60 inches by 60 inches impervious plastic bag-like enclosure affixed around an asbestos-containing material, with glove-like appendages through which material and tools may be handled.

High-efficiency particulate air (HEPA) filter means a filter capable of trapping and retaining at least 99.97 percent of all mono-dispersed particles of 0.3 micrometers in diameter.

Intact means that the ACM has not crumbled, been pulverized, or otherwise deteriorated so that the asbestos is no longer likely to be bound with its matrix.

Miscellaneous material means material that is not surfacing material or thermal system insulation that is largely non-friable, such as floor tile, mastic, ceiling tile, concrete pipes, and fabrics.

Negative Initial Exposure Assessment means a demonstration by the employer that employee exposure during an operation is expected to be consistently below the PELs.

Non-friable material means material that may not be easily crumbled, pulverized, or reduced to powder by hand pressure, but which may become friable with force (sawing, drilling, sanding).

Presumed asbestos containing material (PACM) means thermal system insulation and surfacing material found in buildings constructed no later than 1980 to be presumed asbestos containing material until proven otherwise.

Permissible exposure limit (PEL) is the maximum allowable exposure to asbestos at 0.1 fibers per cubic centimeter of air as an eight (8) hour time-weighted average (TWA).

Regulated area means an area established by the employer to demarcate areas where Class I, II, and III asbestos work is conducted, and any adjoining area where debris and waste from such asbestos work accumulate; and a work area within which airborne concentrations of asbestos, exceed or there is a reasonable possibility they may exceed the permissible exposure limit.

Surfacing material means material that is sprayed, troweled-on or otherwise applied to surfaces, such as acoustical plaster on ceilings and fireproofing materials on structural members, or other materials on surfaces for acoustical, fireproofing, and other purposes.

Thermal system insulation (TSI) means ACM applied to pipes, fittings, boilers, breeching, tanks, ducts or other structural components to prevent heat loss or gain.

4.0 Responsibilities

4.1 Environmental Health and Safety (EHS)

EHS is responsible for providing technical guidance to university employees concerning asbestos hazard evaluation and control, and the implementation of the Asbestos Management Plan, including:

- Obtain and maintain building asbestos surveys for all buildings on campus.
- Maintain and update asbestos warning signs at PSU mechanical rooms.
- Implement, train and provide oversight for this Asbestos Management Plan.
- Facilitate collection and laboratory analysis of suspected asbestos-containing material samples as identified by campus maintenance and construction personnel and complete and provide summary report ([Asbestos-Containing Materials Survey Request & Report Form](#)).
- Consult with PSU employees and supervisors to identify and provide the appropriate level of training and personal protective equipment for all employees which may impact asbestos-containing materials.
- Provide technical assistance to construction and maintenance employees regarding development of exposure control work practices and contract specifications.
- Conduct personal exposure monitoring of PSU employees during asbestos related work and associated recordkeeping.
- Oversee medical surveillance program and assist with the selection of appropriate personal protective equipment.

- Coordinate disposal of asbestos waste removal by an approved asbestos abatement contractor.

4.2 Departmental Supervisors

Departmental managers and supervisors are responsible for ensuring that all employees are properly trained prior to working with asbestos-containing materials and that work is performed in accordance with this Asbestos Management Plan, including:

- Notify EHS whenever the scope of projects may include disturbing ACM or PACM, and coordinate the collection of material samples from each unique material prior to disturbance.
- Provide EHS an [Asbestos Containing Material Survey Request & Report Form](#) prior to any work.
- Partner with EHS to ensure personal exposure monitoring and medical surveillance are done, as needed.
- Notify EHS if an employee has a health concern related to potential asbestos exposure.
- Ensure all employees who potentially work with and could be exposed to asbestos-containing materials receive the appropriate level of asbestos awareness or asbestos operations and maintenance training prior to performing any work that may impact these materials.
- Ensure that all construction and maintenance activities meet OR-OSHA and Oregon DEQ requirements as well as requirements of this plan.

4.3 Project Managers

- Ensure that all construction and maintenance activities (including those done by contractors) meet OR-OSHA and Oregon DEQ requirements as well as requirements of this plan.
- Provide EHS an [Asbestos Containing Material Survey Request & Report Form](#) prior to any work.
- Provide contractors with the location of asbestos-containing material prior to authorizing any work around the material, as per Section 6.6 of the [PSU Hazard Communication Program](#). Inform contractors to stop work immediately and contact the assigned Project Manager or EHS if a previously unidentified ACM or PACM is discovered in a damaged state or was accidentally disturbed.
- Engage only state licensed asbestos abatement contractors for asbestos abatement activities.
- Provide all asbestos surveys and sample results collected by the contractor or consultant to EHS for recordkeeping.
- Provide EHS with a copy of all air clearance sample results once they are obtained. Ensure air clearance documents are posted at work sites before subsequent phases of non-asbestos work begin.
- Notify EHS of changes to mechanical or boiler room equipment and related asbestos abatement that will require signage updates to reflect accurate information.

4.4 Employees

Employees are responsible for following the procedures outlined in the Asbestos Management Plan, including:

- Attend appropriate initial asbestos awareness or operations and maintenance training and annual refresher training as directed by their supervisor and EHS.
- Comply with procedures established in training, or by their supervisors, project managers, EHS, and the contents of this management plan to minimize potential asbestos exposure.
- Inform their supervisor or EHS if they identify a potentially asbestos-containing material they believe should be sampled and analyzed for asbestos content.
- Do not clean, damage, disturb, or remove asbestos-containing materials unless trained and authorized.
- Inform their supervisor or EHS if they identify suspected asbestos debris or damaged asbestos containing materials or if these materials are disturbed or discovered in a damaged state.

5.0 Program Requirements

5.1 Hazard Identification

5.1.1 Asbestos Building Surveys / Supplemental Material Assessment

PSU EHS maintains surveys of asbestos content in building materials for all PSU owned buildings. These surveys are kept in electronic format and are available for review for all PSU staff, personnel, and occupants working on and within these buildings.

The Oregon Department of Environmental Quality (DEQ) requires all commercial buildings regardless of construction date, and residential buildings constructed before Jan. 1, 2004, to have an asbestos survey conducted by an accredited Asbestos Hazard Emergency Response Act (AHERA) inspector prior to any demolition or renovation activities. A copy of the asbestos survey report must be on-site during all renovation or demolition activities, and must be provided to DEQ upon request. These survey documents are also important for the disposal of any building material at a waste transfer station.

Prior to a construction, remodel, or renovation project, employees, project managers, and supervisors shall consult these building surveys in order to determine if the affected building material has been previously sampled and is considered to be ACM or PACM. Employees shall contact their supervisor or a member of EHS staff for access to an electronic or hard copy of these building surveys. CPC Project Managers and FPM employees must complete the [Asbestos-Containing Materials Survey Request and Report Form](#) available from EHS that includes a survey of materials based on the scope of the project. This survey must be present at the location of the demolition, remodel, or renovation project and be made available to the DEQ upon request.

In the event that historical data cannot be identified, or confirmatory sample analysis is desired for a material, additional samples shall be collected for laboratory analysis. Bulk building material samples shall be collected by an AHERA inspector. PSU's EHS department employs

staff members with applicable AHERA certifications. All samples shall be delivered under chain-of-custody documentation to a National Voluntary Laboratory Accreditation Program certified analytical laboratory. Analytical results shall be shared with all interested parties and results shall be archived for future review.

5.1.2 Work Area Isolation and Regulated Area Signage

Project supervisors shall post a sign containing the following words to establish a regulated area for every job that potentially results in personal exposures at or above the PEL or anytime an exposure assessment has not been conducted for the work practice or materials involved.

<p>Danger Asbestos May Cause Cancer Causes Damage to Lungs Authorized Personnel Only</p>

These signs will be posted at each entrance to a regulated area and at least 10 feet from any activity which disturbs ACM. PPE is required for entry into a regulated area. A printable copy of a warning sign is located in Appendix C.

5.1.3 Warning Signs for Mechanical Rooms

Mechanical and boiler rooms where employees may be expected to routinely enter and work around material known to contain ACM or PACM must be posted with warning signs. These signs must be placed at each entrance to the room, and be clearly visible so that an entrant would be warned of the materials located in the area. Department supervisors and project managers are responsible for informing all new staff and contractors of the location and contents of the mechanical room signs and ACM material list and ensuring that proper protocols are in place to limit damage to ACM. Project Managers conducting abatement and/or construction activities in mechanical rooms must ensure the integrity of these signs and must have these signs updated to reflect any changes in information content subsequent to project activities. If signs are found to be missing or damaged, contact EHS for replacement.

5.2 Exposure Control Procedures

5.2.1 Initial Exposure Assessments

During Class III asbestos removal operations, initial exposure assessment shall be performed, unless a negative exposure assessment has been obtained for the work to be performed, in order to document that the chosen personal protective equipment and engineering controls are sufficient to prevent workers from being exposed to fiber concentrations which exceed OSHA's permissible exposure limit (PEL) and excursion limit (EL). This monitoring typically consists of samples from the breathing zones of employees performing the work, with laboratory analysis by phase-contrast microscopy using the NIOSH 7400 Method to ensure that airborne fiber levels are well within regulatory limits for the level of PPE employed. All results from personal exposure monitoring will be provided to both the employee and their supervisor within 5 days of receiving laboratory results. If levels exceed the PEL, the EHS report will include steps and

controls to reduce exposure to below the PEL. Follow up exposure monitoring may be necessary if engineering or administrative controls are put in place to reduce hazardous exposures. Records of all exposure assessments and personal air samples will be archived by PSU EHS for a period of time at least 30 years past the last date of employment of the affected employee.

5.2.2 Negative Exposure Assessments

A Negative Exposure Assessment (NEA) is a demonstration by an employer that an employee's exposure is consistently below the PEL and EL. A negative exposure assessment is job specific and the type and amount of material, asbestos type and percent by weight, control methods, work practices, and environmental conditions be similar to future projects for the NEA to be used to characterize future exposure potentials. The assessment can be used to show that exposure levels for a given job will be below the PEL so that lower levels of personal protective equipment (PPE) can be used. A NEA must rely on data collected within the previous 12 months and performed on similar work conditions and materials.

5.2.3 Personal Protective Equipment

For all Class III asbestos work performed by PSU employees, PPE selection shall be in compliance with the requirements outlined by the guidance material associated with this training. These materials may include a half-face air purifying respirator, disposable coveralls with booties, disposable gloves, and eye protection. All appropriate PPE are to be provided by PSU at no cost to the employee. Please contact your supervisor if the appropriate PPE is not available through Facilities' Stores. For certain routine work practices, a negative exposure assessment may be performed in order to re-evaluate appropriate PPE to a lower level. These determinations shall be performed by EHS staff with assistance by appropriate facilities field staff. Disposable gloves and handwashing practices shall be used for all projects even if a negative exposure assessment has been performed and determined that the permissible exposure limit and/or excursion limit are not likely to be exceeded. Employees who may be required to wear respirators must be enrolled in PSU's Respiratory Protection Program.

5.2.4 Hygiene Practices

PPE shall be worn at all times within the regulated work areas. In addition, employees and supervisors shall ensure that a changing area is provided for putting on and removing PPE. Employees must wash their hands prior to use, and ensure that all PPE is removed prior to exiting the work area. PPE must be bagged for disposal as asbestos-containing waste.

Employees may not eat or drink, use tobacco products or apply cosmetics in the work area.

5.2.5 Housekeeping and Debris Collection Practices

All surfaces shall be maintained as free as practicable of ACM waste, debris, and accompanying dust. Unacceptable methods of asbestos-containing debris collection include dry sweeping, vacuum cleaners or shop vacuums without HEPA filtration, and compressed air. Use of these unacceptable methods may result in personal exposures to asbestos.

Surfaces contaminated with asbestos may not be cleaned using compressed air. Do not drill holes, hammer nails into, hang objects from, or move furniture that damages ACM or PACM.

Waste, debris, and accompanying surface dust in areas containing accessible and/or visibly deteriorated ACM, shall only be cleaned by Class III trained personnel using wet methods and HEPA filtered vacuum methods.

All vinyl and asphalt flooring shall be treated as ACM unless evidence exists to prove otherwise. The following restrictions exist for the care of ACM flooring: no sanding is permitted, stripping shall be conducted using low abrasion pads at speeds lower than 300 rpm with wet methods, and burnishing or dry buffing may be performed only on flooring which has sufficient finish so the pad doesn't contact the flooring material. Broken ACM floor tiles shall only be removed by properly trained personnel.

Ceiling tiles shall not be moved or replaced until it is confirmed that they are not ACM. In buildings where spray-applied surfacing materials are known to exist above drop ceilings, tiles shall be inspected for debris and, if present, shall be decontaminated before they are disturbed to ensure that ACM debris is not spread to the underlying areas. Only Class III trained personnel can replace, decontaminate, or otherwise disturb ACM ceiling tiles or tiles that may be contaminated by ACM surfacing material above.

5.2.6 Waste Collection

Asbestos-containing waste material generated during a small-scale PSU project shall be collected and provided to EHS for disposal. Debris shall be collected into sturdy plastic bags (6-mil poly bags are recommended) and labeled as "Hazardous Waste – Asbestos Debris" with a date and location. Waste disposal from campus will be removed by an approved asbestos abatement contractor.

5.2.7 Responding to Potential Fiber Release Events

A fiber release event is any uncontrolled or unintentional disturbance of asbestos-containing materials resulting in a release of asbestos-containing debris. Additional guidance on ACM debris clean-up can be found in Appendix D. In the event of any asbestos fiber release episode the following procedures shall be immediately followed:

- Notify untrained occupants to vacate the area until clean-up is complete and close doors or otherwise restrict access to the affected area. Isolate the area with a physical barrier or signage to prevent untrained and unprotected persons from entering the area, potentially exposing themselves, or spreading the disturbed material. If possible, have someone remain in the area to prevent these from occurring.
- Notify HVAC personnel to disarm the return air system in the area to prevent released fibers from entering the return air plenum.
- If trained and qualified to do so (Class III O&M Training), clean up small material releases using wet methods and High Efficiency Particulate Air (HEPA) filtered vacuums.
- If not trained or qualified to do so, notify the supervisor on the project and EHS for assistance. Larger fiber release events may require the employment of licensed abatement personnel to perform a level of decontamination not supported by PSU staff.

5.3 Medical Monitoring

For employees required to wear an air purifying respirator, an initial medical determination shall be made to ensure employees are physically able to perform the work and wear a respirator. This determination is performed by Kaiser Permanente via their online respirator portal. EHS coordinates respirator medical approval for employees. In many instances, a desktop review by a medical professional of past health history is enough for medical clearance for respirator use. In other occasions, additional testing of lung function and/or chest x-rays may be requested by the medical professional. All employees who are engaged in asbestos-related work and who are suspected of or documented as having a total of more than 30 days per year of exposure above permissible exposure limits shall be enrolled in a medical surveillance program. All medical records for employees that have either worked with asbestos on campus, or may have been adversely exposed will be maintained by Human Resources for a period of 30 years plus after employment.

6.0 Training

Training is required for all employees who perform OSHA Class I through IV asbestos work, which must meet the requirements of the [EPA Model Accreditation Plan](#). No untrained employees are to intentionally disturb any amount of asbestos. PSU trains affected employees to the Class III and Class IV levels, and contracts all Class I or Class II asbestos removal to state licensed asbestos abatement companies. The following are the basic training requirements for the different types of asbestos work at PSU.

Class III Asbestos Work:

Involves repair and maintenance operations of up to 3 square feet or 3 linear feet of ACM, including thermal system insulation (TSI) and surfacing ACM and PACM. Class III asbestos work requires the OR-OSHA Asbestos Operations and Maintenance (O&M) training, which is initially 16 hours and then an annual 4-hour refresher course. PSU Facilities and Property Management (FPM) and Office of Information Technology (OIT) employees who perform maintenance and repair work where ACM or PACM is likely to be disturbed, or who are responsible for cleanup of debris and/or damage of ACM or PACM material, shall be trained to the OSHA Class III level (O&M training).

Class IV Asbestos Work:

Involves maintenance and custodial activities during which employees have a potential to contact but do not disturb ACM and PACM. Custodial and maintenance employees that may work around ACM but do not disturb the material require the OR-OSHA Asbestos Awareness training that is at least 2-hours upon initial assignment and annually thereafter. Employees, including full-time, temporary, and students who have a potential to contact ACM or PACM and/or conduct activities which may unintentionally impact ACM or PACM shall be provided with the OR-OSHA Asbestos Awareness training.

For additional information regarding the different Classes (I – IV) of asbestos work and the associated training, personal protective equipment, and work practices please consult Appendix B: Requirements for Appropriate Asbestos-Related Work Procedures and Protection.

All employees who have the potential for exposures that exceed OR-OSHA's PEL will also need to be trained in [PSU's Respiratory Protection Program](#). Please contact EHS for additional information.

7.0 Recordkeeping

Environmental Health and Safety (EHS):

- Maintains training records for asbestos safety training
- Maintains and updates the Asbestos Management Plan, as needed
- Maintains employee exposure records for at least 30 years past the last date of employment
- Coordinates with Kaiser Permanente Occupational Health to maintain medical records for the duration of an employee's employment plus 30 years
- Maintains surveys of ACM in PSU-owned buildings

8.0 Program Management

The Asbestos Management Plan is maintained by EHS, reviewed periodically, and updated as needed.

The written Asbestos Management Plan is available, upon request, to employees or their designated representatives, by contacting the EHS-group@pdx.edu.

For additional information or assistance, contact EHS at EHS-group@pdx.edu or call (503) 725-3738.

9.0 Regulatory Standards

Oregon OSHA Division 2, Subdivision Z, 1910.1001 Asbestos (OAR 437-002-0360) requires communication of asbestos hazards.

Oregon OSHA Division 3, Subdivision Z, 1926.1101 Asbestos regulates asbestos exposure in all work as defined in 29 CFR 1910.12(b).

National Emissions Standards for Hazardous Air Pollutants (NESHAP): 40 CFR 61, Subpart M,

Oregon Department of Environmental Quality, Oregon Administrative Rule OAR 340-248-0005

Environmental Protection Agency Guidance for Controlling Asbestos-Containing Materials in Building, EPA Purple Book

Environmental Protection Agency Managing Asbestos in Place, A Building Owners Guide to Operations and Maintenance Programs for Asbestos-Containing Materials, EPA Green Book

10.0 Appendices

Appendix A - Partial List of Potentially Asbestos-Containing Materials

Appendix B - Requirements for Appropriate Asbestos-Related Work Practices and Protections

Appendix C - Asbestos Warning Signs for Regulated Areas

Appendix D - Emergency Asbestos Fiber Release Procedures

Appendix A - Partial List of Potentially Asbestos-Containing Materials

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This list does not include every product/material that may contain asbestos. It is intended as a general guide to show which types of materials may contain asbestos.

- Acoustical plaster
- Adhesives
- Base flashing
- Caulking/putties (interior/exterior)
- Ceiling tiles and lay-in panels
- Cement pipes
- Cement siding
- Cement wallboard
- Chalkboards
- Cooling towers
- Construction mastics (flooring, ceiling tile, etc.)
- Decorative plaster
- Ductwork flexible fabric connections
- Electrical cloth
- Electrical panel partitions
- Elevator brake shoes
- Elevator equipment panels
- Fireproofing materials
- Fire blankets
- Fire curtains
- Fire doors
- Flooring - asphalt tile
- Flooring - backing
- Flooring - Vinyl sheeting
- Flooring - Vinyl tile
- Heating and electrical ducts
- High temperature gaskets
- Insulation - blown-in
- Insulation - boiler
- Insulation - breaching
- Insulation - electric wiring
- Insulation - HVAC duct
- Insulation - pipe (corrugated air-cell, block, etc.)
- Insulation - spray-applied
- Joint compounds
- Laboratory gloves
- Laboratory hoods/table tops
- Laboratory table top undercoating
- Packing materials (for wall/floor penetrations)
- Roll roofing
- Roof patching cement
- Roofing felt
- Roofing shingles
- Sink undercoating
- Spackling compound
- Taping compounds (thermal)
- Textured paints/coatings
- Thermal paper products
- Vinyl wall coverings
- Wallboard

Appendix B - Requirements for Appropriate Asbestos-Related Work Practices and Protections

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Provision	Class I*	Class II*	Class III	Class IV
Definition	Removal of TSI, including pipes, boilers, tanks, and ducts, and surfacing materials that have been sprayed or troweled on.	Removal of all other asbestos not TSI or surfacing material, such as floor or ceiling tiles, siding, or roofing.	Maintenance and repair operations involving intentional disturbance of ACM or PACM or cleaning up unintentionally damaged ACM.	Maintenance and custodial activities in which contact with ACM may occur, including dusting, vacuuming, or mopping.
Competent Person	Required on-site. Contractor and DEQ supervisor training required.	Required on-site. DEQ supervisor training required.	Not required.	Not required.
Air Monitoring	Initial, or daily if no negative exposure assessment (NEA) determining values are below PEL.	Initial, or daily if no NEA determining values are below PEL.	Initial if no NEA. Periodically to monitor exposures remain below PEL.	Not required.
Medical Surveillance	Required if wearing a negative pressure respirator and over the PEL for 30 days per year.	Required if wearing a negative pressure respirator and over the PEL for 30 days per year.	Required if wearing a negative pressure respirator and over the PEL for 30 days per year.	Required if wearing a negative pressure respirator and over the PEL for 30 days per year.
Respirators	Mandatory.	Mandatory if non-intact removal, no NEA, conditions exceed PEL, dry removal, or in emergencies.	Half-mask air-purifying respirator minimum if no NEW, TSI or surfacing materials disturbed, or conditions exceed PEL. Mandatory in emergency response to impacted asbestos.	Not required.
Protective Clothing and Equipment	Required for all jobs if over 25 linear feet or 10 square feet of TSI or surfacing materials removed, or if no NEA, or conditions exceed PEL.	Required for all jobs if no NEA or conditions exceed PEL.	Required for all jobs if no NEA or conditions exceed PEL.	Not required for asbestos but may be required for specific activity.
Training	Equivalent to AHERA	Equivalent to AHERA	OR-OSHA Asbestos	OR-OSHA Asbestos

Provision	Class I*	Class II*	Class III	Class IV
	Supervisor / Worker training	Supervisor / Worker training	Operations and Maintenance (O&M) 16-hr training and annual refresher.	Awareness training and annual refresher.
Decontamination Procedures	Full decontamination if over 25 linear or 10 sq. feet of TSI or surfacing materials removed with connected shower / clean room, or vacuum, change, and shower elsewhere.	If no NEA or over PEL: Equipment area required. Decontaminate or throw away as ACM debris all drop clothes and PPE. Enter regulated areas through equipment or decon areas. Vacuuming required in affected areas.	If no NEA or over PEL: Equipment area required. Decontaminate or throw away as ACM debris all drop clothes and PPE. Enter regulated areas through equipment or decon areas. Vacuuming required in affected areas.	Not required.
Required Work Practices	Wet methods, HEPA vacuum, prompt cleanup and disposal at authorized landfill.	Wet methods, HEPA vacuum, prompt cleanup and disposal at authorized landfill.	Wet methods, HEPA vacuum, prompt cleanup and disposal at authorized landfill.	Avoid disturbing ACM or PACM during maintenance and custodial activities.
Required Work Practices in Areas Above PEL	Negative pressure enclosure HEPA filtration, directed ventilation, supplement with respirators.	Negative pressure enclosure HEPA filtration, directed ventilation, supplement with respirators.	Negative pressure enclosure HEPA filtration, directed ventilation, supplement with respirators.	None.
Prohibited Work Practices	Dry sweeping, compressed air without capture device, high speed abrasive equipment without HEPA capture.	Dry sweeping, compressed air without capture device, high speed abrasive equipment without HEPA capture.	Dry sweeping, compressed air without capture device, high speed abrasive equipment without HEPA capture.	Intentionally disturbing ACM or PACM.
Additional Controls	Critical barriers and isolation methods required if over 25 linear or 10 sq. feet of TSI or surfacing material is removed.	Critical barriers and isolation methods required if no NEA, PEL exceeded, or non intact removal.	None.	None.

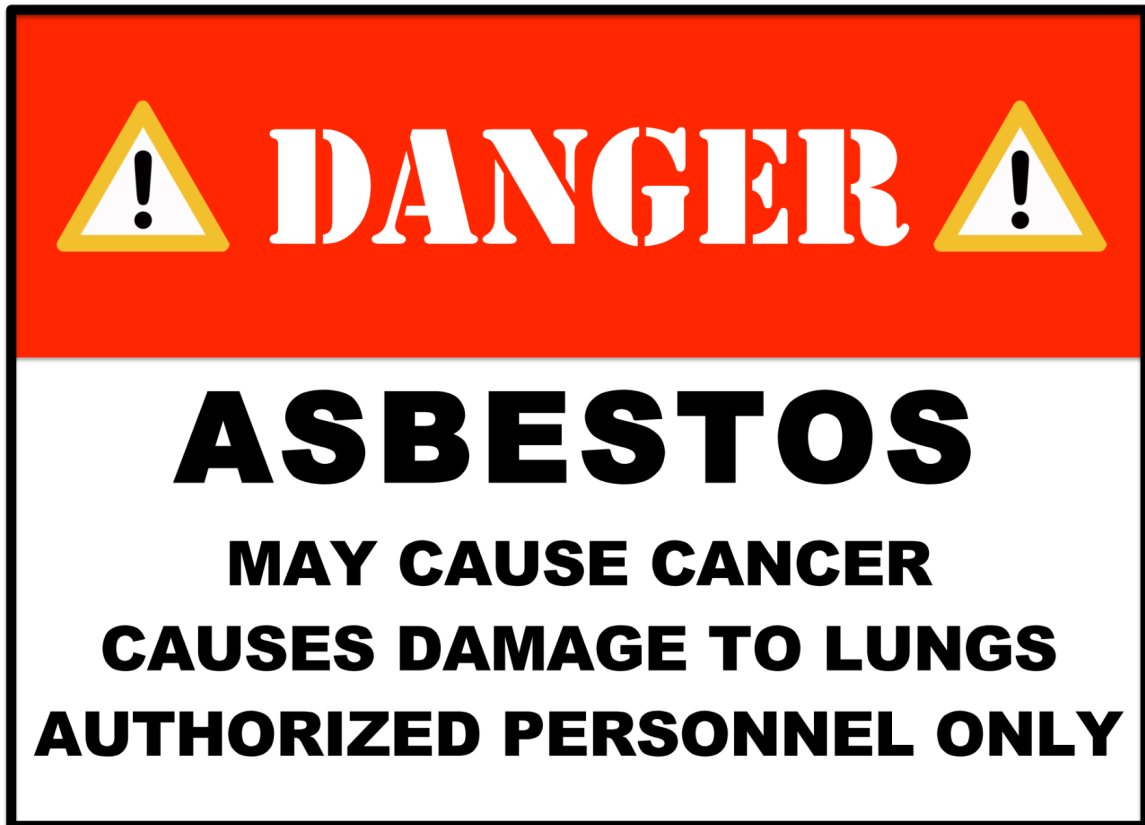
* PSU does not employ DEQ certified asbestos abatement workers. Information regarding Class I and Class II work is included for reference when supervising or overseeing work done by asbestos abatement contractors.

Appendix C - Asbestos Warning Signs for Regulated Areas

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**MAY CAUSE CANCER
CAUSES DAMAGE TO LUNGS
AUTHORIZED PERSONNEL
ONLY**

Appendix D - Emergency Asbestos Fiber Release Procedures

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Special procedures should be followed in order to minimize the spread of asbestos fibers and personal exposures after a fiber release occurs. When areas of potentially asbestos-containing debris are discovered, the following procedures should be followed in order to limit the spread and potential exposure to asbestos material.

Minor Fiber Release Episodes

A minor fiber release episode is one in which **less than 3 square feet or 3 linear feet** of asbestos-containing material is dislodged. Minor fiber releases can be treated with standard wet cleaning and HEPA vacuum techniques by PSU staff who have the Asbestos O&M (16-hour) training and are up-to-date with the PSU Respiratory Protection Program.

Procedures for Control

Initial Response and Preparation:

- The person discovering the fiber release should alert their supervisor and EHS in order to identify any assistance or materials that may be necessary, or if breathing zone air samples should be collected to document any potential exposure to the workers.
- All untrained or non-essential personnel must leave the affected area in order to facilitate the clean-up operations and prevent exposures.
- Notify HVAC staff and request that the ventilation in the area be turned off in order to limit further dispersal of debris material.
- If possible, one worker should stay at the location of the fiber release, and another worker should retrieve the following:
 - Warning signs
 - Personal respirators and disposable suits for both workers
 - Amended water (1 cup dishwashing detergent to 5 gallons water)
 - HEPA vacuum
 - Clean rags
 - 6 mil plastic bags with asbestos waste label
 - Any repair materials that may be necessary as a result of the fiber release
 - Personal air pump and filter cassette (if monitoring will be performed)
- If an initial exposure assessment has not been performed on a particular type of debris clean-up, workers should assume that there may be an asbestos exposure concern and wear personal protective equipment, including disposable coveralls, half-face respirator with particulate filter, gloves, and eye protection.

Clean Up Procedures

- Thoroughly saturate the debris using the sprayer and amended water. Use caution in areas where leaking may occur or finishes may be damaged.
- Place the debris in the labeled 6 mil plastic bag for disposal.
- HEPA vacuum all surrounding areas, including floors, fixtures, and other surfaces, at least 6 feet around the edges of the fallen debris.
- For all hard surfaces, wipe the area with a wet rag; for all carpets or permeable surfaces,

- perform HEPA vacuuming a second time.
- If the ACM or other area requires repair, perform the repair.

Personnel Decontamination and Waste Removal

- Carefully remove the disposable suit and place in an asbestos disposal bag.
- Clean all tools and materials or place them into disposable bags for future decontamination. Place all rags and permeable materials in the asbestos waste bag.
- Remove the respirator and clean with a damp cloth, placing the cloth in the asbestos disposal bag.
- Double bag the disposal bag with another 6 mil plastic bag labeled as asbestos waste.
- Arrange with EHS to transport the asbestos material to a collection area or to a defined location where EHS will remove it. Generally, asbestos waste material is collected in a white storage cabinet outside the West Heating Plant prior to transport to the Hillsboro landfill.

Major Fiber Release Episodes

A major fiber release episode is one in which **more than 3 square feet or 3 linear feet** of friable asbestos-containing material is dislodged. Major fiber release episodes typically require that licensed and certified asbestos contractors be employed to clean-up and decontaminate the area.

Procedures for Control

In the event that a major fiber release episode is discovered, the following procedures should be followed in order to minimize the potential for exposure to personnel in the vicinity and to begin the process of clean-up.

- The person discovering the fiber release should immediately alert their supervisor and EHS.
- If the area is an occupied space, notify the occupants that they must move away from the affected area until clear for re-occupancy by PSU staff. Personnel should not take any items out of the area that are contaminated or potentially contaminated from the material release.
- The area should be isolated as soon as non-essential personnel have left. Doors to the potentially contaminated area should be closed and locked, and signs should be placed at all entrances stating that the area is closed, stating the extent of closure, date, time, and contact name and number for the responding parties, EHS representative, or CPSO if they have become involved in the isolation of the area. Signs should include relevant hazard information, such as

**DANGER
ASBESTOS
MAY CAUSE CANCER
CAUSES DAMAGE TO LUNGS
AUTHORIZED PERSONNEL ONLY
FOR INFORMATION, CONTACT XXX AT xxx-xxx-xxxx**

- Notify HVAC personnel to disarm the return air system in the area to prevent released



fibers from entering the return air plenum. Document what time the system is shut down, if applicable.

- If additional help with isolation of the potentially contaminated area is required, contact PSU's CPSO and request assistance.
- Once the area is isolated and has appropriate signage, stay in the area until a supervisor or representative with EHS is on-site and assumes control of the area. Once free to do so, create a timeline of events such that a potential exposure log can be created in the future

If a large-scale material release is discovered outside of regular staff hours, contact CPSO and request that dispatch contact EHS's On-Call phone number to request assistance from EHS staff. Additionally, make efforts to contact HVAC staff to attempt to isolate the area from the ventilation system