

ASBESTOS MANAGEMENT

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Program Contact List

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For Renovation and Demolition Work See Asbestos Containing Materials Guidance Document

Fiber Release Emergency see Section XXIII page 30
Isolate the area until help arrives.

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I. INTRODUCTION

This program will outline Central Washington University's (CWU) asbestos control policies and describe its operation and maintenance procedures. Asbestos is a known human carcinogen. Health effects of asbestos exposure include lung cancer, asbestosis, mesothelioma, and other cancers. Cigarette smoking and asbestos exposure can have a combined effect which puts the exposed person at a risk 50 – 90 times that of a non-exposed person of contracting lung cancer. In order to protect the health and well-being of the students, faculty, and staff at CWU and all of its related facilities against any potential health risk from this carcinogen, this Asbestos Management Program and Asbestos Operations and Maintenance Program (O&M) has been established.

This O & M Program consists of a set of procedures applied to building cleaning, maintenance, and general operations in order to maintain a building environment free from any asbestos contamination.

In this program are provisions for each type of asbestos-containing material (ACM) found in the campus buildings. These types are:

- SURFACING MATERIAL – ACM sprayed or troweled onto surfaces such as acoustical plaster found on ceilings and walls, and fireproofing material on structural members,
- THERMAL SYSTEM INSULATION – ACM applied to pipes, boilers, tanks, ducts, etc., to prevent heat loss or gain or water condensation, and
- MISCELLANEOUS MATERIAL – other ACM such as floor tile, wallboard, siding, and transite materials.

The materials in the first two categories are of particular concern since they tend to be friable, i.e., can be reduced to powder by hand pressure. Friable materials are more likely to release fibers when disturbed. However, non-friable materials may release fibers if ground, cut, sanded, broke or otherwise manipulated.

The O & M Program is intended to be flexible in that every situation on campus cannot be foreseen in advance. Methods of response may change from time to time while others may be added. New procedures will be developed as experience and job requirements expand. The O & M Program has seven main goals:

1. identify and notify building occupants of locations of asbestos-containing building materials
2. perform regular ACM surveillance to identify areas where damage has occurred or is likely to occur
3. institute a work permit system for clean-up and repair of damaged ACM in a prioritized manner
4. minimize future fiber release through the control of activities that might disturb ACM
5. institute a record keeping system to document O & M activities
6. institute medical surveillance and respiratory protection programs, as applicable
7. institute training program for custodial and maintenance staffs

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Large projects involving more complex procedures for the removal of asbestos containing materials is considered to be “asbestos abatement projects” and require asbestos control and abatement procedures that are outside of the scope of an O & M program. On some rare occasions, when it is deemed necessary by the University Construction and Planning Department, contracts for asbestos removal will be awarded to competent qualified asbestos removal contractors as determined by pre-qualification of bidders. However, most of these projects will be performed by the CWU Insulation Maintenance/Asbestos Abatement Department. The Insulation Maintenance/Asbestos Abatement (IM/AA) Department will also perform small scale, short-duration operations and maintenance tasks that require the disturbance or removal of more than one square foot or one lineal foot of asbestos containing material.

CUSTODIAL STAFF AND MAINTENANCE WORKERS: University employees whose job functions are to repair or maintain the mechanical systems or clean the campus buildings may come in contact with ACM, but should not disturb the ACM. Employees who come in contact with, or have reason to believe they may be in contact with ACM, are to contact the Environmental Health and Safety (EH&S) Manager immediately for an appropriate response action.

All protocol established under this O & M Program will comply with the State of Washington Department of Labor and Industries(L&I) WAC 296-62-077 and WAC 296-65-002, the Occupational Safety and Health Administration (OSHA) regulations 29 CFR 1910.1001 and CFR 1926.1101, and the Federal Asbestos Hazard Emergency Response Act (AHERA), 40 CFR Part 763, Subpart E.

II. SCOPE

This O&M Program applies to all the CWU buildings.

III. REQUIREMENTS

29 CFR 1926.1101 (k) and WAC 296-62-07721 require building owners and employers to determine the presence, location and quantity of known or “presumed” Asbestos Containing Materials (ACM) in all buildings constructed prior to 1981. All employees/occupants must be notified of asbestos and “presumed” asbestos in their areas.

All non-intact ACM (damaged asbestos containing material) must be repaired, removed or regulated.

Employees who perform maintenance and custodial activities which contact, but do not disturb asbestos containing material, require two hours annual asbestos awareness training.

Before planning a project an assessment will be completed to locate any asbestos-containing building materials that may be disturbed during any renovation or demolition. This “good faith” inspection will be documented by a written report and maintained on file by the CWU EH&S Department.

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IV. ADMINISTRATION

The CWU Asbestos Management Plan will be administered by the Manager of the EH&S Department in conjunction with the IM/AA Supervisor. Their duties are as follows:

Environmental, Health and Safety Manager (EH&SM)

- 1) Responsible for coordinating asbestos related sampling and university abatement project design activities and providing technical assistance.
- 2) Provide asbestos hazard evaluations and technical assistance.
- 3) Provide training for University personnel as required by regulation.
- 4) Act as the CWU liaison with regulatory agencies.
- 5) Notify appropriate administrators/management personnel regarding asbestos hazards
- 6) Coordinate asbestos sampling activities.
- 7) Administer the Respiratory Protection Program.
- 8) Oversee the Medical Surveillance Program.
- 9) Serve as the CWU liaison with contractors and consultants regarding asbestos containing materials.
- 10) Responsible for asbestos inspections and asbestos project designs and notification of potential hazard in accordance with WAC 296-62-07721 and WAC 296-62-054.

Insulation Maintenance/Asbestos Abatement Supervisor (IMS)

- 1) Responsible for ensuring that asbestos abatement work is conducted in conformance with all applicable regulations such that CWU personnel are not exposed to hazardous levels of asbestos.
- 2) Responsible for submitting Notice of Intent (NOI) and Temporary Waste Storage Application to Yakima Regional Clean Air Agency (YRCAA).
- 3) Responsible for informing the EH&S Manager regarding asbestos abatement work at CWU.
- 4) Provide for the certification and recertification training of asbestos workers.
- 5) Provide for asbestos waste disposal.
- 6) Ensure that all check sheets, project reports, asbestos waste disposals manifests and sample data sheets are forwarded to the EH&S Manager. The IM/AA Shop will retain a copy for back-up files.
- 7) The IMS will be responsible for cost estimates.
- 8) Responsible for providing proper notifications to regulatory agencies and acquiring all necessary permits required prior for the removal of any asbestos containing material.
- 9) Will provide EH&S with disposal records.

V. O & M PROCEDURES

This O & M Program has been developed to allow timely response to maintenance problems such as installing valves, repairing traps, repairing leaks, or changing gaskets in areas where insulation that is in good condition is known to contain asbestos. The program will allow for minor repairs involving encapsulation procedures where they are appropriate. This program will be used as

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required during typical maintenance activities. All O&M projects will be of short duration (1 or 2 days) and will be limited to the following types of work.

SURFACING MATERIAL AND THERMAL SYSTEM INSULATION

With the exception of demolition, up to 10 square feet or 25 linear feet of asbestos-containing surfacing material or thermal system insulation may be performed as O&M work regardless of the purpose of abatement. However, all surfacing material removal will be performed within a glove-bag or mini-containment.

Glove bag systems may be used to remove presumed asbestos containing material (PACM) and/or asbestos containing material (ACM) from straight runs of piping and elbows and other connections with the following specifications and work practices.

Specifications:

- Glove bags must be made of 6 mil thick plastic and must be seamless at the bottom.
- Glove bags used on elbows and other connections must be designed for that purpose and used without modifications.

Work practices:

- Each glove bag must be installed so that it completely covers the circumference of pipe or other structure where the work is to be done.
- Glove bags must be smoke-tested for leaks and any leaks sealed prior to use.
- Glove bags may be used only once and may not be moved.
- Glove bags must not be used on surfaces whose temperature exceeds 150 degrees F.
- Prior to disposal, glove bags must be collapsed by removing air within them using a HEPA vacuum.
- Before beginning the operation, loose and friable material adjacent to the glove bag operation must be wrapped and sealed in two layers of six millimeter (mil) plastic or otherwise rendered intact.
- At least two persons must perform glove bag removal operations.

A small walk-in enclosure which accommodates no more than two persons (mini-enclosure) may be used if the disturbance or removal can be completely contained by the enclosure with the following specifications and work practices:

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Specifications:

- The fabricated or job-made enclosure must be constructed of 6 mil fire resistant plastic or equivalent.
- The enclosure must be placed under negative pressure by means of a HEPA filtered vacuum or similar ventilation unit.
- Change room: A small change room made of 6-mil-thick polyethylene plastic should be contiguous to the mini-enclosure, and is necessary to allow the worker to vacuum off his/her protective coveralls and remove them before leaving the work area. While inside the enclosure, the worker should wear Tyvek disposable coveralls or equivalent and must use the appropriate HEPA-filtered dual cartridge respiratory protection.

Work practices:

- Before use, the mini-enclosure must be inspected for leaks and smoke-tested to detect breaches, and any breaches sealed.
- Before reuse, the interior must be completely washed with amended water and HEPA-vacuumed.
- During use, air movement must be directed away from the employee's breathing zone within the mini-enclosure.

MISCELLANEOUS ASBESTOS-CONTAINING MATERIALS

Additional controls for removal or disturbance of “miscellaneous” ACM must also be performed by complying with the work practices and controls designated for each type of asbestos work to be performed set out in this paragraph. Where more than one control method may be used for a type of asbestos work, the employer may choose one or a combination of designated control methods.

Flooring Material

For removing vinyl and asphalt flooring materials which contain ACM or for which in buildings constructed no later than 1980, the employer has not verified the absence of ACM according to WAC 296-62-07712 (10)(a)(ix). The employer must ensure that employees comply with the following work practices and that employees are trained in these practices according to WAC 296-62-07722.

- (i) Flooring or its backing must not be sanded.
- (ii) Vacuums equipped with HEPA filter, disposable dust bag, and metal floor tool (no brush) must be used to clean floors.
- (iii) Resilient sheeting must be removed by cutting with wetting of the snip point and wetting during de-lamination. Rip-up of resilient sheet floor material is prohibited.
- (iv) Scraping of residual adhesive and/or backing must be performed using wet methods.
- (v) Dry sweeping is prohibited.
- (vi) Mechanical chipping is prohibited unless performed in a negative pressure enclosure.

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- (vii) Tiles must be removed intact, unless the employer demonstrates that intact removal is not possible.
- (viii) When tiles are heated and can be removed intact, wetting may be omitted. Heating will not be over 700 degrees Fahrenheit and open flame will not be used.
- (ix) Resilient flooring material including associated mastic and backing must be assumed to be asbestos-containing unless an industrial hygienist determines that it is asbestos-free using recognized analytical techniques.

Roofing Material

For removing roofing material which contains ACM the employer must ensure that the following work practices are followed.

- (i) Roofing material must be removed in an intact state to the extent feasible.
- (ii) Wet methods must be used to remove roofing materials that are not intact, or that will be rendered not intact during removal, unless such wet methods are not feasible or will create safety hazards.
- (iii) Cutting machines must be continuously misted during use, unless a competent person determines that misting substantially decreases worker safety.
- (iv) When removing built-up roofs with asbestos-containing roofing felts and an aggregate surface using a power roof cutter, all dust resulting from the cutting operation must be collected by a HEPA dust collector, or must be HEPA vacuumed by vacuuming along the cut line. When removing built-up roofs with asbestos-containing roofing felts and a smooth surface using a power roof cutter, the dust resulting from the cutting operation must be collected either by a HEPA dust collector or HEPA vacuuming along the cut line, or by gently sweeping and then carefully and completely wiping up the still wet dust and debris left along the cut line. The dust and debris must be immediately bagged or placed in covered containers.
- (v) Asbestos-containing material that has been removed from a roof must not be dropped or thrown to the ground. Unless the material is carried or passed to the ground by hand, it must be lowered to the ground via covered, dust-tight chute, crane or hoist:
 - Any ACM that is not intact must be lowered to the ground as soon as is practicable, but in any event no later than the end of the work shift. While the material remains on the roof it must either be kept wet, placed in an impermeable waste bag, or wrapped in plastic sheeting.
 - Intact ACM must be lowered to the ground as soon as is practicable, but in any event no later than the end of the work shift.
- (vi) Upon being lowered, unwrapped material must be transferred to a closed receptacle in such manner so as to preclude the dispersion of dust.
- (vii) Roof level heating and ventilation air intake sources shall be isolated or the ventilation system must be shut down.
- (viii) Notwithstanding any other provision of this section, removal or repair of sections of intact roofing less than 25 square feet in area does not require use of wet methods or HEPA vacuuming as long as manual methods which do not render the material non-intact are used to remove the material and no visible dust is created by the removal method used. In

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determining whether a job involves less than 25 square feet, the employer must include all removal and repair work performed on the same roof on the same day.

Cementitious Asbestos Products

When removing cementitious asbestos-containing siding and shingles or transite panels containing ACM on building exteriors the employer must ensure that the following work practices are followed.

- (i) Cutting, abrading or breaking siding, shingles, or transite panels, must be prohibited unless the employer can demonstrate that methods less likely to result in asbestos fiber release cannot be used.
- (ii) Each panel or shingle must be sprayed with amended water prior to removal.
- (iii) Unwrapped or un-bagged panels or shingles must be immediately lowered to the ground via covered dust-tight chute, crane or hoist, or placed in an impervious waste bag or wrapped in plastic sheeting and lowered to the ground no later than the end of the work shift.
- (iv) Nails must be cut with flat, sharp instruments.

Asbestos-Containing Gasket Material

When removing gaskets containing ACM, the employer must ensure that the following work practices are followed.

- (i) If a gasket is visibly deteriorated and unlikely to be removed intact, removal must be undertaken within a glove bag.
- (ii) The gasket must be immediately placed in a disposal container.
- (iii) Any scraping to remove residue must be performed wet

Non-Specific Asbestos-Containing Materials

When performing any other removal of miscellaneous asbestos-containing material for which specific controls have not been listed above, the employer must ensure that the following work practices are complied with.

- (i) The material must be thoroughly wetted with amended water prior to and during its removal.
- (ii) The material must be removed in an intact state unless the employer demonstrates that intact removal is not possible.
- (iii) Cutting, abrading or breaking the material must be prohibited unless the employer can demonstrate that methods less likely to result in asbestos fiber release are not feasible.
- (iv) Asbestos-containing material removed, must be immediately bagged or wrapped, or kept wet until transferred to a closed receptacle, no later than the end of the work shift.

VI. BUILDING INSPECTIONS

At this time, a total inventory of the ACM locations on the CWU campus does not exist. As additional areas are inspected and sampled, records are updated to more fully document the new findings.

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VII. LABELS AND SIGNAGE

Pipes, boilers, storage vessels, structural members or equipment with insulating material that has been tested positive for ACM will be labeled with caution labels. Such caution labels will be printed in letters of sufficient size and contrast as to be readily visible and legible. Each room or area will have a minimum of one (1) such label and such additional labels as may be necessary to ensure ready visibility and legibility.

The absence of a label does not ensure that the material does not contain asbestos. Any material that might be removed, penetrated, damaged or otherwise distributed by repair, remodeling, renovation, maintenance or other activity must either be analyzed or assumed/presumed to be ACM.

For facilities with ACM used as acoustical material on ceilings or walls, a notice will be posted informing employees of the presence of asbestos in the work place. The notice will read, at a minimum:

NOTICE TO EMPLOYEE

This facility has been inspected for the presence of asbestos containing material.
Asbestos containing material is present in this facility.
Asbestos containing material may cause health problems.

VIII. TRAINING

A. CUSTODIAL STAFF AND MAINTENANCE WORKERS

Custodial staff and maintenance workers whose normal work duties might cause them to come in contact with ACM will be trained in an asbestos awareness session provided by the CWU EH&S Department which includes:

- 1) information regarding types of ACM and its various uses and forms;
- 2) information on the health effects associated with asbestos exposure;
- 3) instructions to contact the EH&S Manager whenever suspect or potential ACM must be disturbed prior to commencing work; and
- 4) instructions to NOT:
 - drill holes in asbestos-containing materials,
 - hang plants or pictures on structures covered with asbestos containing materials,
 - sand or otherwise abrade asbestos-containing floor tile,
 - damage asbestos containing materials,
 - install curtains, drapes or dividers in such a way that they may damage asbestos containing materials,
 - dust floors, ceilings, molding or other surfaces in asbestos contaminated environments with a dry brush or sweep with a dry broom,
 - use an ordinary vacuum to clean up asbestos-containing debris, remove ceiling tiles below asbestos-containing materials,

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B. INSULATION MAINTENANCE/ASBESTOS ABATEMENT DEPARTMENT

Employees in the IM/AA Department will be required to handle ACM. They will be required to be trained and certified as:

- 1) Asbestos abatement supervisors. They must complete an asbestos abatement supervisor's course and appropriate refresher courses approved by the WISHA and EPA.
- 2) AHERA asbestos inspectors. They must complete an asbestos inspector's course and appropriate refresher courses approved by the WISHA and EPA.

The following additional training will be required for the IM/AA Department:

- 1) A course in confined space entry following the NIOSH curriculum in confined space entry.
- 2) Current cardiopulmonary resuscitation (CPR) training, which may be provided by the American Heart Association, the American Red Cross, or other approved training provider.
- 3) Current first aid training, which may be provided by the American Red Cross or other approved training provider.

C. ENVIRONMENTAL HEALTH AND SAFETY DEPARTMENT

Members of the EH&S Department will be required to sample for and assess the condition of building materials that may contain asbestos. Asbestos surveys, design specifications and notification of potential hazard will be provided for projects.

- 1) AHERA asbestos inspectors. They must complete an asbestos inspector's course and appropriate refresher courses approved by the WISHA and EPA
- 2) AHERA asbestos project designer. The EH&S manager must complete an asbestos project designer course and appropriate refresher courses approved by the WISHA and EPA.
- 3) AHERA asbestos management planner. The EH&S manager must complete an asbestos management planner course and appropriate refresher courses approved by the WISHA and EPA.

IX. OUTSIDE CONTRACTORS

All contractors providing services to CWU will comply with the following:

- 1) Contractors shall be responsible for providing a training and education program for their employees which meets the applicable requirements of the Federal Hazard Communication Standard (29 CFR 1910.1200 or 29 CFR 1926.59) and/or the WAC 296-155-180.
- 2) Contractors whose materials or work pose a health hazard to CWU employees shall be responsible for providing safety data sheets (SDSs) to the CWU Construction and Planning Department for those materials. They must also inform the affected CWU employees' supervisor(s) of the nature and extent of the hazard(s).

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- 3) Contractors who encounter suspected ACM during the course of their work and who contact, disturb or damage the suspected ACM must immediately stop work and contact the CWU Hazardous Material Coordinator who will determine whether the material contains asbestos.
- 4) Contractors who are conducting whole building demolition or major renovation are required to complete their own asbestos surveys. CWU will provide them with what asbestos data is available, but it is the responsibility of the contractor to confirm or reject the previous asbestos results.

X. RECORDKEEPING REQUIREMENTS

All records will be compiled by the CWU EH&S Manager and/or the Insulation Asbestos Abatement Department Supervisor.

A. BULK SAMPLES

1. Since a complete inventory of ACM in campus buildings is not available, the EH&S Manager will keep sample results on file of known ACM. This file will be updated as new information is gathered.
2. Where bulk samples have not been previously collected, samples will be collected of material that will be disturbed during any renovation, demolition or maintenance activity, or the material will be assumed to be ACM.
3. Bulk samples will be collected by those persons holding a current AHERA Inspector or Supervisor accreditation.
4. A copy of laboratory reports for bulk samples will be retained by the EH&S Department and the IM/AA Department.
5. All samples will be sent under Chain of Custody procedures.

B. WORK ORDERS

1. Work orders will be reviewed by the EH&S Department prior to the commencement of work.
2. The EH&S Department will verify the presence or absence of asbestos and issue appropriate work order recommendations. (assigning the work to the general maintenance staff or to the IM/AA Department)

C. AIR SAMPLING

Pre-abatement monitoring: Prior to the start of asbestos work, representative area monitoring must be conducted for comparison to clearance monitoring as required by subsection (3)(h) of WAC 296-62-07705. Pre-abatement air monitoring is not required for outdoor work.

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Daily monitoring: The IM/AA Department must conduct daily monitoring that is representative of the exposure of each employee who is assigned to work within a regulated area unless a negative exposure assessment is provided.

Daily monitoring exception: When all employees within a regulated area are equipped with full face-piece supplied-air respirators operated in the pressure-demand mode equipped with either an auxiliary positive pressure self-contained breathing apparatus or a HEPA filter, the IM/AA Department may dispense with the daily monitoring.

Negative exposure assessment: For any one specific asbestos job which will be performed by employees who have been trained in compliance with the standard, the IM/AA Department may demonstrate that employee exposures will be below the PELs by data which conform to the following criteria:

- (i) Objective data demonstrating that the products or material containing asbestos minerals or the activity involving such product or material cannot release airborne fibers in concentrations exceeding the TWA and excursion limit under those work conditions having the greatest potential for releasing asbestos; or
- (ii) Where the IM/AA Department has monitored prior asbestos jobs for the PEL and the excursion limit within 12 months of the current or projected job, the monitoring and analysis were performed in compliance with the asbestos standard in effect; and the data was obtained during work operations conducted under workplace conditions “closely resembling” the processes, type of material including percentage of asbestos, control methods, work practices, and environmental conditions used and prevailing in the employer's current operations, the operations were conducted by employees whose training and experience are no more extensive than that of employees performing the current job, and these data show, that under the conditions prevailing and which will prevail in the current workplace, there is a high degree of certainty that employee exposures will not exceed the TWA or excursion limit; or
- (iii) The results of initial exposure monitoring of the current job made from breathing zone samples that are representative of the 8-hour TWA and 30-minute short-term exposures of each employee covering operations which are most likely during the performance of the entire asbestos job to result in exposures over the PELs.

Monitoring outside negative-pressure enclosures: The IM/AA Department must conduct representative area monitoring of the airborne fiber levels at least every other day at the HEPA machine exhaust and entrance to the decontamination area.

Clearance monitoring: Representative area air monitoring must be taken at the completion of the asbestos work. Air sample results must be obtained before removal or re-occupancy of the regulated area. Clearance air monitoring is not required for outdoor asbestos work. The IM/AA must demonstrate by monitoring that the airborne concentration is below the permissible

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exposure limit, or at or below the airborne fiber level prior to the start of the asbestos work, whichever level is lower. Clearance samples will be performed in accordance with current WISHA requirements.

All samples will be sent under Chain of Custody procedures.

XI. ANALYTICAL LABORATORY

Only National Voluntary Laboratory Accreditation Program (NVLAP) certified laboratories will be used for analysis. Laboratories will provide analysis sheets and their NVLAP accreditation to CWU.

XII. MEDICAL MONITORING

The CWU EH&S Manager is responsible for administering the medical examination and monitoring guidelines.

- CWU will provide pre-placement examinations for all custodial and maintenance staff.
- CWU will provide pre-placement, annual and termination medical examinations for workers in the IM/AA Department.
- Pre-placement, annual, and termination medical examinations shall follow the protocol specified in 29 CFR 1926.1101.
- Initial examination will take place within 30 calendar days following the worker's first performance of asbestos-related activities.
- Annual examinations should take place on, or before, the expiration date of the last physical.
- Termination examination will be offered to employees within 30 calendar days of termination of abatement duties. Termination examination will not be provided if an initial or annual examination was performed within 90 days prior to termination.
- Employees who decline the exam will be required to sign a form stating so.
- Medical records will be maintained by the University's medical provider and the physician's statements will be maintained by the CWU EH&S Department for a minimum of 30 years from the date of cessation of potential exposure to airborne concentrations of asbestos fiber or 30 years from date of termination of employee, whichever is longer.

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XIII. EQUIPMENT AND SUPPLIES

A. AMENDED WATER

All O&M activities and abatement activities will be performed utilizing wet methods which involve treating the material with an amended water solution containing a wetting agent. This wetting agent may be 50% polyoxyethylene ether and 50% polyethylene ether or appropriate substitute mixed in a concentration of 1 fluid ounce to 5 gallons of water or as specified by its manufacturer. All excess water must be filtered through a five micron filter before the water can be disposed.

B. HEPA VACUUMS

- HEPA vacuums will be used on all O&M work on campus.
- Only personnel trained on and familiar with HEPA vacuums will use HEPA equipment.
- HEPA vacuums will be stored with duct tape placed over the inlet of the tank to prevent any fiber leakage.
- Hoses will be duct taped at each end in a like manner.
- Attachments will be kept clean and stored in a properly labeled and sealed plastic bag between uses.
- HEPA vacuums will be cleaned as needed utilizing the following methods:
 1. Workers will wear protective clothing and, as a minimum, half-face air purifying respirators.
 2. Bags and filters will be removed in an established work area or other containment.
 3. After being misted thoroughly with water, bags and filters will be carefully removed.
 4. HEPA vacuums will be stored in a secured limited access stockroom between uses.
 5. The vacuum will be labeled with appropriate asbestos warning labels.
 6. Manufacturer instructions will be followed for all maintenance performed on HEPA vacuums.
 7. HEPA filters should be changed as needed.
 8. Records will be maintained for all service performed and filter replacements

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C. NEGATIVE PRESSURE FILTRATION DEVICES

- Only personnel trained and familiar with negative pressure filtration devices will use and maintain this equipment.
- Machines will be stored with the intake and exhaust ducts plugged and taped to prevent any fiber release.
- An appropriate warning label will be placed on the equipment.
- Decontamination of the exterior or the replacement of filters will only be performed in a designated work area.
- Transportation of equipment to a designated area will be performed after sealing the unit with 6-mil plastic.
- Decontamination will be done by HEPA vacuuming the exterior surfaces followed by wet wiping with amended water. Water and rags will be disposed of as contaminated waste.
- Filters will be removed with great care after misting them with amended water, and will be disposed of as contaminated waste.
- HEPA filters should be changed as needed.
- Manufacturer instructions will be followed for all maintenance performed on negative pressure filtration devices.
- Records will be maintained for all service performed and filter replacements.

CI. PROTECTIVE CLOTHING & PERSONAL EQUIPMENT

When performing O&M activities, all employees will wear:

- Respirators as required by the CWU *Respiratory Protection Program* (respirators will be required for all phases of preparation for removal, repair, or cleaning where damaged ACM is present).
- One-piece construction disposable coveralls with hood and boots (ankles will be taped when needed, to take up slack and reduce the chance of tripping).
- Gloves for hand protection.
- Disposable underwear for modesty (when needed).
- Hard hats (where required).

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- Safety shoes or rubber boots (as required).
- Hearing protection (where required).

XIV. PERSONNEL DECONTAMINATION

Employees will always decontaminate themselves every time they leave the work area. Depending on the size of the project, one of three decontamination methods will be used. The IMS will instruct each employee at the onset of a project as to which method will be utilized.

A. PORTABLE SHOWER DECONTAMINATION

- This will consist of a module that may be constructed on site or portable so it can be moved from site to site. This module will consist of a clean room, shower area, and dirty room separated by air-locks made of double sheets of 6 mil fire resistant poly.
- Procedures to exit the work area through the portable shower decontamination unit is as follows:
 - a. Employees will remove their disposable suit in the dirty room and, while leaving their respirator on, proceed to the shower.
 - b. Employees will shower and remove the respirator after they have washed themselves and the exterior of the respirator. Cartridges will be disposed of as contaminated waste.
 - c. Employees will proceed to the clean room and put on street clothing.

- **DOUBLE-SUIT DECONTAMINATION**

- This is an alternative personal decontamination procedure for use on small projects such as glove-bags.
- The location for the three chambered decontamination unit will be designated by the IMS. The decontamination unit must meet the requirements outlined below:
 - In order to enter the work area, the employee will remove street clothes and don two disposable suits.
 - Respirators will be put on before entering the actual work area.
 - Upon leaving the work area, the employee will step into a clean room or other designated clean area. Each employee will HEPA vacuum the exterior surface of the

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disposable suit and wet wipe the exterior surfaces of their respirator with amended water.

- The outer suit and rags used to wipe the respirator will be placed in disposable bags to be disposed of as contaminated waste.
- A clean suit will be put on over the remaining suit. While still wearing the respirator, the employee will proceed to the shower.
- The respirator will be removed after the employee has showered.
- The respirator cartridges and the disposable suits will be placed in a disposable bag to be disposed of as contaminated waste.
- If a vehicle is to be used to transport employees to a shower, a non-contaminated driver will be utilized. No one in a suit and respirator will drive a vehicle.

D. SHOWER FACILITY REQUIREMENTS

- The facility will be constructed so as to permit use by either sex without embarrassment or harassment.
- All shower water waste will be filtered with five micron filters. The shower filter and residue will be disposed of as asbestos-contaminated material.
- The shower will have hot and cold water supplied from the building's existing domestic hot and cold water lines.
- A liquid soap dispenser will be provided in the shower.
- The shower will be stable, free of sharp edges, and trip or fall hazards.
- Negative pressure will be created by a HEPA filtered suction device and will provide a flow of make-up air from the clean room through the shower to the dirty room.
- The temperature of the clean room and the shower will be maintained above 50 degrees F.

XV. GLOVE-BAG PROCEDURES

A. GENERAL INFORMATION

- A glove-bag may not be used for more than one application.

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- Electrical equipment below the level of the glove-bag or within arm's reach of glove-bag must be deactivated. All electrical equipment used by the workers must be provided with GFI protection.
- A minimum of two people will be required to perform all glove-bagging projects.
- Personnel involved in glove-bag abatement will be required to wear appropriate personal protective equipment (e.g., proper respiratory protection and full-body protection)
- Fully utilize a decontamination shower which has a location which may be reached by using a clean protective suit over the potentially contaminated work suit.

B. ISOLATION OF WORK AREA

To prevent contamination of the building environment, the work area where glove-bagging is to be performed must be isolated from the rest of the building environment. There are two classifications with procedures listed as follows:

1. Unoccupied Areas

Areas such as equipment rooms, attics, pipe chases, etc., will require critical barriers over doorways, windows, etc., to isolate the area from the rest of the building. Critical barriers will be constructed by a single layer of 6-mil poly. Two layers of 6-mil poly will be laid down on the floor, barrier tape will be put up to identify the work area, and the glove-bag will be carefully smoke tested and maintained under negative pressure for the duration of the job.

2. Occupied Areas

Areas such as offices, public bathrooms, etc., can present special problems. The functional area involved will be evacuated. Critical barriers will be installed as appropriate. Movable items will be cleaned with a HEPA-filtered vacuum and wet wiped to remove any asbestos-containing dust, and moved out of the functional area. Non-movable items will be sealed with 6-mil plastic and sealed to the floor with duct tape to prevent contamination.

C. PRE-WORK ACTIVITIES

1. Tools required for glove-bag operations include:

- 2 knives (one inside and one outside the glove bag),
- 1 brush,
- 1 pair wire cutters,
- 1 bone saw for cutting around pipe insulation,
- 1 HEPA vacuum,
- penetrating encapsulant in a hand sprayer,
- bridging encapsulant prepared and placed in baggies when edges of ACM pipe material will remain,

- smoke tubes and aspirator bulbs,

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- rags or paper towels,
 - duct tape,
 - asbestos waste disposal bags
 - 1 hand sprayer or spray bottle with amended water, and
 - Fire resistant 6 mil poly
2. Portable shower decontamination chambers will be constructed or a shower will be designated if the two suit method will be used.
 3. The integrity of the pipe where the work is to be performed will be checked to determine if loose pipe lagging several feet or even yards away from the work could be jarred loose by the activity. Loose or questionable areas will be wrapped with two layers of 6 mil fire resistant poly and taped before glove-bagging. No glove-bagging will be done if a fiber release situation already exists until the fiber release is dealt with. The IMS is to be contacted if this is the case.
 4. The temperature of the piping will be checked. These procedures only apply to pipe temperatures of 150 degrees F or less.

D. WORK PROCEDURES

1. Place signs and warning tape around work area to avoid accidental entry by unauthorized personnel or building occupants.
2. Turn off or lockdown all air-handling units and gas services to the work area. All HVAC systems will be shut down, or if impractical, modified and sealed with critical barriers.
3. Place two layers of 6 mil poly under the pipe to be glove-bagged. The size will be equal to twice the length of the glove-bag used in all four directions as measured from the center of where the glove-bag will be. If the area where work is being performed is smaller than these requirements, then run poly to the walls and overlap the wall one-foot up.
4. HEPA vacuum and wet wipe the pipe insulation directly over the poly.
5. Wrap one layer of duct tape around the pipe at each location where glove-bag will be attached.
6. Cut down sides of glove-bag to accommodate the pipe diameter. Cut far enough so as to leave ample working space on the top of pipe inside the bag.
7. Place tools into tool pouch.
8. Place glove-bag around section of pipe insulation to be removed, fold the top together and seal it with duct tape.

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9. Duct tape the ends of the glove-bag to the previously wrapped tape.
10. Insert the wand from the hand sprayer through the water sleeve. Water sleeve can be made by making a small slit in the side of the bag in line with the vacuum sleeve, tape wand to bag. Alternatively, a spray bottle of amended water previously placed in the tool pouch may be utilized.
11. Using the smoke tube and aspirator bulb, place tube into the vacuum sleeve, fill bag with smoke. Remove the smoke tube and twist vacuum sleeve closed. While holding the vacuum sleeve tightly, gently squeeze the glove-bag and look for any leaks. If leaks are found, they will be repaired and the bag retested until there are no leaks.
12. Attach nozzle of HEPA vacuum, using tape, through the vacuum sleeve, turn on the vacuum only slightly to put negative pressure on the side of the bag, being careful not to collapse the bag.
13. Using the sprayer with amended water, spray the outside surface of insulation thoroughly.
14. Use bone saw or knife to cut the insulation of each end of the section inside the glove-bag. Throughout this process, amended water is to be applied to the cutting area to keep dust to a minimum.
15. Once ends are cut, the section should be slit from end to end using the utility knife. The cut will be made along the bottom of the pipe, or in its natural seam if found with amended water continuously applied to prevent dry fibers. Some insulation will have wire or steel bands that will have to be clipped with wire cutters as well.
16. When finished, spray and clean the tools and place back into tool pouch.
17. Lift the insulation from the pipe carefully and gently place in the bottom of glove-bag. Place it so the driest area is pointing up and wet it down thoroughly with the sprayer.
18. Use the brush, rags or paper towels, and amended water to scrub and wipe down the exposed piping until no visible residue remains. The putty knife will be used to scrape hardened material.
19. Wipe down the top and sides of the glove-bag interior and push all visible residue to the lowest possible part of the glove-bag.
20. Encapsulate the exposed ends of remaining ACM insulation with bridging encapsulant and the bare piping and non-ACM contaminated pipe wrap with penetrating encapsulant.
21. Place reusable tools into one or more of the gloves and pull sleeve inside out. Twist sleeve tightly between tools and bag body. Wrap duct tape on twisted portion and cut the sleeve through the taped twisted section. The contaminated tools may be placed directly into the

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next glove-bag or may be decontaminated by submerging in a bucket of soapy water. Open glove under water and clean and dry tools. Waste and sleeve will be disposed of as contaminated waste. Rags or paper towels cannot be reused or cleaned and will be left in the glove-bag.

22. Turn on the HEPA vacuum and collapse glove-bag.
23. Remove spray wand from bag and place hand over hole to prevent vacuum loss.
24. Remove vacuum nozzle from bag again, holding hole to prevent loss of vacuum.
25. With the removed insulation in the bottom of the bag, twist the bag several times and tape together, separating the top from the bottom of the bag.
26. Slip a 6 mil disposal bag over the glove-bag (still attached to pipe). Remove the tape and open the top of the glove-bag as the HEPA vacuum is being run with the opening. Cut glove-bag loose from pipe and fold it down into the disposal bag.
27. Twist the top of the disposal bag closed after removing excess air from bag with the HEPA vacuum and seal with duct tape, making a goose neck. To be ready for disposal, glove-bags will be double bagged and the bag will have the appropriate warning label.

E. EMERGENCY PROCEDURES

Minor tears that may occur in the glove-bag can be taped up because of the negative pressure inside the bag. If a tear develops, coordination will be needed between both employees, one patching the tear while the other operates HEPA vacuum on and off to maintain negative pressure without collapsing the bag.

If a spill occurs, such as material leaving the glove-bag and falling on the floor, or visible fibers escaping through a tear, if the material has fallen on the poly on the floor, then ensure it is well saturated and fold the corners of the first layer over the material and tape closed. Continue with the removal procedures of the glove-bag. Contact the Asbestos Supervisor to report a fiber release.

Employees shall never stop in the middle of a glove-bag procedure and leave friable ACM exposed to the work area unless there is an immediate danger to life or health. Employees must seal off the exposed ACM first, and then report the fiber release episode.

XVI. ENCAPSULATION PROCEDURES

A. GENERAL

Encapsulant will not be applied to any surfacing ACM unless:

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- The asbestos surface has first been tested for substrate adhesion and/or encapsulant penetration.
- The encapsulant has been certified by Underwriters Laboratories to be a rated component of the fireproofing system.

Encapsulant will not be applied to any surfacing ACM which has been water damaged, which are subject to water or physical damage after encapsulation, or which exhibit signs of de-lamination.

B. SAMPLING

1. A background area sample will be taken in the work area if extensive damage to ACM has been noted.
2. Personal samples will be taken during any and all encapsulation projects.
3. Area samples will be collected when a barrier has been constructed separating the work area from an occupied larger area. These area samples will be taken from the area outside of the work enclosure.

C. PROTECTIVE CLOTHING

On all encapsulation projects, workers will wear the following:

- respirators as required by the CWU *Respiratory Protection Program*,
- disposable coveralls with hood and boots (one-piece construction), gloves.

D. ENCAPSULATION PROCEDURES

1. Isolate and clean the work area by HEPA vacuuming and/or wet wiping to remove accumulated dust and fibers.
2. Place 6 mil fire resistant poly on the floor under the work area.
3. Apply one coat of penetrating encapsulant per the manufacturer's recommendations.
4. Apply a tinted bridging encapsulant per the manufacturer's recommendations.
5. If necessary, apply nylon netting around edges of pipes and fittings. Ensure that the encapsulant penetrates the netting.
6. Apply a second coat of encapsulant (of another color if desired) after the first has dried.
7. Dispose of all waste and poly on floor in 6 mil labeled disposal bags upon completion of the work.
8. Remove excess air from the bag with a HEPA vacuum, twist the bag closed, and seal with duct tape.
9. Area barriers, where applicable, will not be removed until air samples have been analyzed and clearance established.
10. All personnel must decontaminate following the procedures as outlined in Section XIII.

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XVII. MINI-ENCLOSURES

A mini-enclosure will be utilized in areas that a full containment cannot be constructed, nor can a glove-bag be used. A mini-enclosure can be portable or can be made by lining a closet with a double layer of 6 mil fire resistant poly.

- Enclosures are to be constructed with double layer 6 mil fire resistant plastic sheeting.
- Enclosures will be equipped with negative pressure filtration devices. A HEPA vacuum can be utilized if the enclosure is small enough. For example, a HEPA vacuum can that operates at 105 cfm can provide four air changes per hour for a mini-enclosure that is 12' X12' X 8'.
- The amount of surfacing or thermal insulation which may be removed within a mini-enclosure shall be limited to 10 square feet, which need not be contiguous.
- Critical barriers will be erected within the mini-enclosure, if applicable.
- All electrical power within arm's reach of asbestos workers in a mini-enclosure must be locked out in accordance with CWU Lockout/Tag-out procedures.
- A small change room approximately three feet square made of 6 mil fire resistant poly will be contiguous to the mini enclosure to allow the worker to vacuum off the protective clothing and to change suits before proceeding to the shower.

XVIII. NEGATIVE PRESSURE ENCLOSURES

The enclosure should be constructed to provide an air-tight seal around ducts and openings into existing ventilation systems and around penetrations for electrical conduits, telephone wires, water lines, drain pipes, etc. Enclosures should be both airtight and watertight except for those openings designed to provide entry and/or air flow control.

Size: An enclosure should be the minimum volume to encompass all of the working surfaces yet allow unencumbered movement by the worker(s), provide unrestricted air flow past the worker(s), and ensure walking surfaces can be kept free of tripping hazards.

Shape: The enclosure may be any shape that optimizes the flow of ventilation air past the worker(s).

Structural Integrity: The walls, ceilings and floors must be supported in such a manner that portions of the enclosure will not fall down during normal use.

Openings: It is not necessary that the structure be airtight; openings may be designed to direct air flow. Such openings should be located at a distance from active removal operations. They should be designed to draw air into the enclosure under all anticipated circumstances. In the event that negative pressure is lost, they should be fitted with either HEPA filters to trap dust or automatic trap doors that prevent dust from escaping the enclosure. Openings for exits should be controlled by an airlock.

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Barrier Supports: Frames should be constructed to support all unsupported spans of sheeting.

Sheeting: Walls, barriers, ceilings, and floors should be lined with two layers of fire resistant 6 millimeter poly sheeting.

Seams: Seams in the sheeting material should be minimized to reduce the possibilities of accidental rips and tears in the adhesive or connections. All seams in the sheeting should overlap, be staggered and not be located at corners or wall-to-floor joints.

Areas within an Enclosure: Each enclosure consists of a work area, a decontamination area, and waste storage area. The work area where the asbestos removal operations occur should be separated from both the waste storage area and the contamination control area by physical curtains, doors, and/or airflow patterns that force any airborne contamination back into the work area.

Establishing Negative Pressure within the Enclosure:

- **Negative Pressure:** Air is to be drawn into the enclosure and exhausted through a HEPA filter for 24 hours a day during the duration of the project.
- **Air Flow Tests:** Air flow patterns will be checked before removal operations begin, at least once per operating shift and any time there is a question regarding the integrity of the enclosure. The primary test for air flow is to trace air currents with smoke tubes or other visual methods. Flow checks are made at each opening and at each doorway to demonstrate that air is being drawn into the enclosure and at each worker's position to show that air is being drawn away from the breathing zone.

Monitoring Pressure within the Enclosure: After checking the initial air flow patterns, the static pressure must be monitored within the enclosure. Monitoring may be made using manometers, pressure gauges, or combinations of these devices. It is recommended that they be attached to alarms and strip chart recorders at points identified by the design engineer.

- **Corrective Actions:** If the manometers or pressure gauges demonstrate a reduction in pressure differential below the required level, work should cease and the reason for the change investigated and appropriate changes made. The air flow patterns should be retested before work begins again.
- **Pressure Differential:** The design parameters for static pressure differentials between the inside and outside of enclosures typically range from 0.02 to 0.10 inches of water gauge, depending on conditions. All zones inside the enclosure must have less pressure than the ambient pressure outside of the enclosure (-0.02 inches water gauge differential). Design specifications for the differential vary according to the size, configuration, and shape of the enclosure as well as ambient and mechanical air pressure conditions around the enclosure.

Air Handling Unit Exhaust: The exhaust plume from air handling units should be located away from adjacent personnel and intakes for HVAC systems.

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Air Flow Volume: The air flow volume (cubic meters per minute) exhausted (removed) from the workplace must exceed the amount of makeup air supplied to the enclosure. The rate of air exhausted from the enclosure should be designed to maintain a negative pressure in the enclosure and air movement past each worker. The volume of air removed from the enclosure should replace the volume of air in the containment at every 5 to 15 minutes. Air flow volume will need to be relatively high for large enclosures, enclosures with awkward shapes and enclosures with multiple openings.

Airlocks: Airlocks are mechanisms on doors and curtains that control the air flow patterns in the doorways. If air flow occurs, the patterns through doorways must be such that the air flows toward the inside of the enclosure. Sometimes vestibules, double doors, or double curtains are used to prevent air movement through the doorways. To use a vestibule, a worker enters a chamber by opening the door or curtain and then closing the entry before opening the exit door or curtain. Airlocks should be located between the equipment room and shower room, between the shower room and the clean room, and between the waste storage area and the outside of the enclosure. The air flow between adjacent rooms must be checked using smoke tubes or other visual tests to ensure the flow patterns draw air toward the work area without producing eddies.

Hygiene Facilities: During egress from the work area, each worker should step into the equipment room, clean tools and equipment, and remove gross contamination from clothing by wet cleaning and HEPA vacuuming. Before entering the shower area, foot coverings, head coverings, hand coverings, and coveralls are removed and placed in impervious bags for disposal or cleaning. Airline connections from airline respirators with HEPA disconnect and power cables from powered air-purifying respirators (PAPRs) will be disconnected just prior to entering the shower room.

XIX. FLOOR TILE

Non-friable floor tile removal will be done in accordance with the procedures for Class II removal found in 29 CFR 1926.1101 and will include the following:

- A current negative exposure assessment (within 12 months of the project) consisting of air monitoring of a similar project showing the PEL and excursion limit are not anticipated to be exceeded must be in place for the following procedures to apply.
- All floor tile removal will be conducted in a regulated area demarcated and with limited access.
- All floor tile removal will be supervised by a competent person, defined as one who has met the requirements for an EPA accredited Asbestos Supervisor.
- All workers performing floor tile removal will receive training by the CWU EH&S Department or other accredited company in a course meeting the requirements of 29 CFR 1926.1001 for Class II floor tile work.
- Floor tile will be wetted with a detergent (dish-washing liquid at one tablespoon per gallon) and water mixture.

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- Tiles will be removed intact wherever possible and placed in 6-mil polyethylene bags or drums with the appropriate labeling for disposal.
- Asbestos-containing flooring or its backing shall not be sanded. Sanding of adhesive containing asbestos must be done only by certified asbestos abatement workers in a full negative pressure enclosure

CEILING TILE

- All appropriate L&I notices will be filed with those agencies by the Asbestos Supervisor.
- All air handler units (heaters, air conditioners, blowers) will be turned off.
- The ceiling tile removal will only be done when the room/rooms are not occupied.
- All personal items, all books, instruction aids, and other items and all movable furniture will be removed from the room.
- Decontamination facilities must be established.
- Critical barriers must be erected. If the area above the ceiling tiles to be removed constitutes an air plenum, design of critical barriers in the plenum will be determined by the Asbestos Supervisor.
- Workers will wear disposable, full body coveralls and full-face supplied air respirators.
- All work will be performed in a negative pressure enclosure.
- A 6-mil poly drop cloth will be used under the work teams, in case a tile falls.
- Workers will work in teams, with one worker removing and bagging tiles, and one worker holding a HEPA vacuum near the grid.
- Tiles will be placed in 6-mil asbestos-marked bags, sealed with duct tape. This bag will be placed in a second bag for transport.
- The tiles will be disposed of in an approved asbestos landfill, and a copy of the waste shipment records will be provided to the CWU EH&S Department.
- The ceiling suspension grid will be HEPA vacuumed and wet wiped.
- Air monitoring tests will be run in accordance with Department of Occupational Safety and Health (DOSH) regulations.

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XXI. ASBESTOS-CONTAINING CEILING TEXTURING

- A. Asbestos-containing ceiling texturing, when in place and undamaged, does not constitute a significant health risk.
- B. Painting of such material is not considered be asbestos encapsulation and therefore is not required to be performed by certified asbestos abatement workers.
- C. Removal of the material constitutes an asbestos O&M or abatement project and will be done only by certified asbestos abatement workers using the following procedures:
 - All appropriate L&I and SRCAA notices will be filed with those agencies by the Asbestos Supervisor.
 - All air handling units (heaters, air-conditioners, blowers, etc.) will be turned off.
 - The ceiling texturing removal will only be done when the work area is not occupied.
 - All movable items will be removed from the room.
 - Decontamination facilities will be established, but need not be contiguous with the ceiling texturing removal area if workers can travel to the facilities without endangering the general public or the environment.
 - Critical barriers will be erected.
 - A single layer of wall poly and a double layer of floor poly will be constructed.
 - Workers will wear protective full body coveralls and full-face supplied air respirators.
 - All work will be performed in a negative pressure enclosure.
 - Air monitoring tests will be run in accordance with WISHA regulations.

XXII. NON-FRIABLE MATERIAL

- Removal of non-friable material will be done in accordance with the procedures for Class II removal found in 29 CFR 1926.1101.
- A current negative exposure assessment (within 12 months of the project) consisting of air monitoring of a similar project showing the PEL and excursion limit are not anticipated to be exceeded must be in place for the following procedures to apply.

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- All Class II non-friable material removal will be conducted in a regulated area demarcated and with limited access.
- All Class II non-friable material removal will be supervised by a competent person, defined as one who has met the requirements for an Asbestos Supervisor.
- All workers performing Class II non-friable material removal will be trained by the CWU EH&S Department in a course meeting the requirements of 29 CFR 1926.1001 for Class II work.
- Non-friable ACM will be handled in such a manner as to keep the material non-friable.
- Wet methods will be used.

XXIII. FIBER RELEASE PROCEDURES

A. GENERAL

- A fiber release episode is defined as the physical release of ACM visible on the floor or other surfaces, ACM that has been recently damaged, or an air sampling concentration of 0.01 fibers/cc or higher.
- Only certified asbestos workers will be allowed to clean up fiber release episodes.
- All employees are encouraged to report the presence of any suspected ACM on floors, water or physical damage, or any other evidence of possible fiber release to the Asbestos Supervisor or the EH&S Department.

B. MINOR FIBER RELEASE EPISODE PROCEDURES (UNOCCUPIED AREAS ONLY)

- Notify the Asbestos Supervisor or the EH&S Department.
- Air handling units to the affected area will be turned off and the functional area will be secured. Air sampling may be done to determine the boundaries of the work area and for proper respiratory protection selection by the Asbestos Supervisor. Air handling units can be turned back on only after the affected functional area is identified and temporary modifications are made to the system to isolate work areas from the rest of the building structure.
- Employees will wear a disposable suit and the appropriate respirator.
- Appropriate danger signs will be posted at all entrances and exits.
- All power to the affected area will be turned off. Power for working systems will be installed independent from the affected system and will have ground fault interrupters.

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- Employees will thoroughly saturate the fallen debris with amended water. Debris will then be placed in a 6-mil disposable bag for disposal as contaminated waste.
- Repairs or removal of the damaged material will then occur, as determined by the Asbestos Supervisor.
- The work area will then be cleaned in accordance with the initial cleaning procedure.
- Employees will follow personal decontamination procedures as specified in Section XII.
- Based on a post-work air sample of 0.01fibers/cc or lower, barriers and signage will be removed after final clearance is given.

C. MAJOR FIBER RELEASE PROCEDURES (OCCUPIED AREAS)

- Evacuate all occupants from building area.
- Contact Energy Management to shut down the ventilation system.
- Lock and secure functional area and post warning signs.
- Report to Asbestos Supervisor and CWU EH&S Manager.
- Work will begin as per CWU EH&S instructions.

XXIV. STORAGE AND TRANSPORTATION TO THE LANDFILL

A. STORAGE

- ACM will be stored on campus only in the storage vehicle authorized by the Asbestos Supervisor.
- ACM placed in the storage vehicle will be in sealed double bags containing asbestos warning labels which state, "DANGER, CONTAINS ASBESTOS FIBERS, AVOID CREATING DUST, CANCER AND LUNG DISEASE HAZARD."
- The outer bag will be labeled with the name of the waste generator (CWU) and the location at which the waste was generated (building and street address).
- When the storage vehicle is full or every 60 days, the Asbestos Supervisor will arrange for disposal at an approved landfill.

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B. TRANSPORTATION TO THE LANDFILL

- Only the vehicles approved by the Asbestos Supervisor will be used to transport ACM to an approved landfill.
- Disposal will only be at a landfill licensed by the L&I to accept asbestos waste.
- Only certified asbestos workers will pick up, transfer, and deliver asbestos waste.
- Vehicles will be enclosed and posted with the appropriate Department of Transportation (DOT) placard. The cargo area will have an impervious liner or be double lined with 6-mil plastic. If the asbestos waste is placed inside sealed, 6-mil lined 55 gallon drums prior to loading onto the truck, the cargo area will not have to be lined with 6-mil plastic.
- The 55 gallon drums may be disposed at the landfill along with asbestos waste.
- Bags or drums will be very carefully handled to prevent puncture or damage, never thrown or tossed around.
- Workers will wear, at minimum, protective clothing and a half-face respirator and have available duct tape, paper towels, amended water, and extra disposable bags.
- Signage will be displayed during loading and unloading procedures with the statement, "DANGER. ASBESTOS. CANCER AND LUNG DISEASE HAZARD. AUTHORIZED PERSONNEL ONLY. RESPIRATORS AND PROTECTIVE CLOTHING ARE REQUIRED IN THIS AREA.
- After the material has been placed in the landfill and before leaving, the workers will carefully remove their protective clothing, wipe down the outside of the respirator, and dispose of the protective clothing, wipe down rags and respirator filters in double 6-mil asbestos disposal bags and place them in the landfill.

XXV. FIRE AND WORK SAFETY

A. EMERGENCY EGRESS

- Before work is to begin, an emergency escape plan will be formulated and tailored to each project. The egress plan will be familiar to all employees on the project.
- Emergency lighting shall be that which is already provided in each building and has battery back-up and sufficient power to illuminate obstructions between all areas of the containment and the exits.

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- Visible and illuminated emergency lights are provided in each building and shall not be compromised by any asbestos activity.

B. FIRE SAFETY

- Employees will ensure that all sources of ignition are removed and that gas and other fuel sources are turned off, such as pilot lights in boilers, heaters, hot water tanks, etc.
- Lighters, matches, and smoking are strictly prohibited in the work area.
- Any possible fire hazards will be removed prior to hanging plastic. This includes removal of any chemicals, flammable liquids, heat sensitive materials, etc.
- Trash and debris will be kept to a minimum, i.e., tape, poly, bags, lumber, etc.
- Polyethylene can produce toxic fumes when ignited and therefore shall not be placed against hot surfaces. Only fire resistant Polyethylene will be used for containment.
- A fire extinguisher will be present at every work site.
- In case of fire, the fire hazard becomes more immediate than the asbestos hazard and workers may need to violate the plastic barrier.

C. ACCIDENTS

Employees will call 911 in the event of an emergency involving a fire, chemical spill, or medical emergency. The Asbestos Supervisor and the CWU EH&S Manager will then be notified immediately of any accidents or breach of containment.

D. ELECTRICAL SAFETY

- All electrical equipment used for asbestos abatement and O&M work must be provided Ground Fault Interrupter (GFI) protection.
- Electrical power must be locked out in accordance with CWU Lockout/Tag-out procedures as follows:
 - for glove-bag work, all electrical within an arm's reach of asbestos workers and electrical equipment below the level of the glove-bag,
 - for mini-enclosure work, all electrical within arm's reach of asbestos workers,
 - for all other work where water is used, electrical within the demarcated area.

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