University of Washington

Facilities Services

Asbestos

Operations and Maintenance Program

January 2001

Revised June 2005

Table of Contents

Introduction

This Asbestos Operations and Maintenance (O&M) Program is designed to support a consistent approach for asbestos operations and maintenance activities by providing administrative and technical procedures that: 1) protect employees, students and the general public from inadvertent exposure to hazards of asbestos-containing materials (ACM) that may arise from Facilities Services work; 2) permit the normal conduct of business while properly managing ACM in place; and 3) assure compliance with applicable regulations.

"Managing ACM in place" means that asbestos is present in many University facilities, and as long as it is not disturbed, it can remain in place and continue to do the work it was installed to do. The University's policy of management in place relies on employees, and those who supervise them or manage their work, to be trained, aware and alert. Potential or actual asbestos hazards must be identified and addressed before starting any work that could damage or disturb asbestos-containing building materials. If damaged potential or known ACM is discovered, immediate action is required to report it to the proper authority and to control access to the area by others.

Program Elements

1. Program Scope

This O&M Program governs the activities of all Facilities Services shops and custodial personnel. It is consistent with federal, state and local regulations, University of Washington policies, and incorporates by reference the provisions of the University of Washington's Annual Asbestos Abatement Maintenance Contract and Hazardous Materials Consultant. (This O&M Program does not apply directly to the management of public works asbestos projects.) Although primarily directed towards ACM in buildings, this program also encompasses non-building ACM (such as maintenance of vehicle brake drums that may contain asbestos).

2. Definitions

Definitions are contained in Appendix A.

3. Program Responsibilities

A. Asbestos Coordinator

1. Manage the Annual Asbestos Abatement Maintenance Contract and the Hazardous Materials Consultant Contract in support of campus operations and maintenance.

2. Review and manage specific asbestos projects.

3. Assist in developing asbestos work practices.

4. Maintain project files and copies of surveys by consultants.

5. Provide asbestos design support for Facilities Services shops' projects.

Provide training on the handling of <1% ACM.

Conduct negative exposure assessments.

Track data for annual and quarterly PSCAA reports, which are submitted by EH&S.

Act as the lead during any incident response. This may include determining whether disturbed materials are ACM/PACM and taking action to control site access and initiate abatement or repair, as well as coordinate all involved responders.

Identify any workers or occupants who may have been exposed during an incident and refer them to EH&S for follow-up.

B. Managers/Supervisors/Leads

1. Ensure that employees are aware of the administrative procedures and technical information in this program to prevent and minimize disturbances of asbestos-containing materials.

2. Keep track of employees' training/certification for various classifications of asbestos work. Ensure certifications are current. Identify workers needing medical examinations (including time of retirement).

3. Ensure that employees performing regular maintenance and custodial activities conduct and document periodic surveillance of the condition of asbestos-containing materials. Ensure that appropriate administrative procedures are in place to cover the specific trades.

4. Assess and document potential asbestos impacts for Facilities Services maintenance and alterations projects. Perform worksite hazard assessments (includes all potential hazards, not just asbestos).

Act as the point of contact between shop employees and the Asbestos Coordinator; initiate consultant work requests and asbestos abatement work requests.

Notify building coordinator, building occupants, and project requestor in writing of work that will disturb asbestos. Any previous survey or good faith inspection reports must be posted at the worksite.
If outside contractors perform any work at the University, ensure that the contractor has been notified of any ACM, and that they know where the Good Faith survey

report may be found. Evaluate outside contractor employee training for asbestos related work.

C. Employees

1. Follow specific work practices found in Section 6, "Safe Work Practices for All Employees", and in Appendices C and D.

2. Observe their work areas for potential asbestos hazards (also referred to as daily surveillance) and note and report the condition of asbestos-containing materials when performing regular maintenance.

3. Request a copy of a "Good Faith Inspection" report from the Asbestos Coordinator if there are concerns regarding the presence of ACM.

4. Notify their supervisor and/or the Asbestos Coordinator if suspected ACM or asbestos hazard conditions are encountered.

5. Assist their supervisor in documenting asbestos-related activities or occurrences.

6. Complete an incident report, as needed.

D. Engineering Services

Provide engineering support to Facilities Services as requested.

Maintain records of abatement actions in order to draft reports as required by the Air Operating Permit issued to the UW by the Puget Sound Clean Air Agency (PSCAA).

E. Environmental Health and Safety

Advise as to worksite safety assessment and project review.

Maintain the asbestos area restricted access program, including: a) investigating potential areas of asbestos impact; b) documenting, posting and securing identified restricted areas; and c) providing follow-up assessment.

Maintain medical surveillance program for employees working with asbestos-containing materials.

Maintain a respiratory protection program.

Provide worker awareness training programs.

Serve as a contact for regulatory agencies. Provide notifications (annual and quarterly) to PSCAA.

When any ACM/PACM or suspect materials have been disturbed, assess possible exposures and advise Facilities Services and Campus Employee Health as to exposures, and any recommended follow-up actions concerning the incident, as well as precautions to take to prevent further incidents.

Ensure that employees with potential exposures receive the appropriate follow-up.

4. Administrative Procedures

Notification

Regulatory Agencies must be notified of asbestos abatement work to be performed. Typically, abatement work undertaken as part of the O&M Program will be performed under the Hazardous Materials Abatement Contract. The Abatement Contractor files annual and individual notices to regulatory agencies. Annual notices are filed with the Puget Sound Clean Air Agency (PSCAA) by the Asbestos Coordinator through EH&S. See Appendix H for Specific Terms of the UW Air Operating Permit on file with PSCAA (Permit No. 21320). On an annual basis, the FS Asbestos Office will also submit a certification of compliance with the permit terms and conditions.

Individual notices will be filed by the term contractor, and/or by other general contractors as needed.

UW Notification

1. Employee Notification - All Facilities Services employees, including, custodial and FOMS, whose activities could impact asbestos-containing materials, must be notified in advance of this potential. Supervisors are responsible for ensuring that employees are informed of the presence of ACM that could be encountered during the course of their work, and trained to the appropriate level to conduct the work.

   For each new permanent or temporary employee, the supervisor must:

   (a) give the employee a copy of "Asbestos Safety for Your Protection" (Appendix E, Form A);

   (b) review the Asbestos O&M Program with the new employee;

   (c) schedule the employee into Asbestos Awareness training.

2. Building / Area Occupant Notification - All **Building/Area Occupants** within and adjacent to the area in which asbestos abatement work is to be performed must be notified. For abatement activities included in the O&M Program (small-scale, short-duration activities), the Asbestos Office notifies the Building Coordinator of the work schedule. The Building Coordinator will be notified of all activities that

affect asbestos-containing materials in occupied areas (usually this does not include mechanical spaces and utility tunnels). The Building Coordinator will notify building occupants who might be affected by these activities. Contacts must be documented in writing by the Asbestos Coordinator and include the individual contacted, time and date of contact, and a brief description of the work to be performed.

3. Outside Service Contractors - All **Outside Service Contractors** whose activities could impact ACM and other personnel who may disturb asbestos-containing materials through the course of their work duties (e.g., utility contractors, computer installers, etc.) must be notified of the potential hazards and presence of ACM. The Hazardous Materials Consultant (contracted by the University) typically issues a "Good Faith Inspection Report" to the service contractor that includes the asbestos survey and any abatement information. This document must be kept available on the jobsite. Capital Projects must ensure that they notify their contractors directly or through their consultants regarding the potential disturbance of ACM, PACM or suspect materials. Outside Service Contractor employees must have the appropriate training (at a minimum, two-hour asbestos awareness training).

Training

Workers who may contact but not disturb ACM or PACM must receive a minimum of two (2) hours of asbestos awareness training. Supervisors must ensure that employees are scheduled for this training, which includes the following information:

Initial and annual training must be a minimum of two (2) hours
Background information on asbestos
Information on health effects of asbestos exposure
Locations of ACM in work areas
Instruction in recognition of damage or deterioration
Name of person to notify if ACM is damaged or deteriorated

Employees who work with a specific type of ACM (such as non-friable roofing) receive eight (8) hours of training for Class II asbestos work. The 8-hour Class II material specific training includes:

Methods of recognizing asbestos;
Health effects;
Synergistic effect of smoking and asbestos in producing lung cancer;
Specific work practices and engineering controls, respiratory protection; housekeeping procedures, hygiene facilities, protective clothing, decontamination procedures, emergency procedures, and waste disposal procedures.

Training on working around building materials that contain less than one per cent (1%) asbestos is provided by the FS Asbestos Office for those employees who may handle wallboard or other <1% materials. In addition, specific situational training (for groups

and individuals), whenever a potential problem arises (document this training in personnel records), may be required. Employees who receive training beyond the 2-hour asbestos awareness must also receive respirator training, fit testing and medical certification through EH&S.

Specialized training is also required for selected Facilities Services personnel who are involved with the asbestos program. For example, the UW Asbestos Coordinator must maintain their Washington State Asbestos Supervisor certification with the initial 40-hour course and annual 8-hour refreshers. The Unit Representatives are also USEPA accredited AHERA Building Inspectors and comprise the Reserve Asbestos Program.

Labeling

Some labeling of asbestos containing materials may be present throughout the campus. After removal and reinsulation, the Term Abatement Contractor will label new insulation as non-asbestos (except in Power Plant). As a general rule, the following guidelines for asbestos labeling apply:

Do not deface existing signs, labels. Painters/painting contracts should emphasize the protection of existing labels.

Signs about ACM must be posted in mechanical rooms as ACM is identified in accordance with WAC296-62-07721 (4) and 07721(9). Signs must be understandable to all.

Restricted Access Signs are posted at certain areas by EH&S, when an exposure hazard may exist. Facilities Services employees who observe damaged or defaced signs should notify EH&S immediately.

Cleaned areas above ceiling tile, abated work area signs posted by contractor/consultant are temporary signs following cleaning/abatement projects.

D. Hazardous Materials Abatement Contract

The primary mechanisms utilized by Facilities Services for the abatement of asbestos-containing materials are the Hazardous Materials Abatement Contract and the Consultant Contract. The contract provides for the removal, repair, and other maintenance abatement work on asbestos or asbestos-contaminated materials in support of campus operations, maintenance and minor alterations.

Typical projects for the Abatement Contractor include: removal and disposal of ACM (such as acoustical surfacing, fireproofing, pipe insulation, flooring materials, etc.); encapsulation, repair and/or maintenance of in-place ACM (such as the repair of pipe lagging); and clean up of asbestos debris or contaminated surfaces.

1. To initiate asbestos work:

a. The request can be initiated by shop personnel, but must be reviewed by the Supervisor.

b. Complete a "Consultant Work Request Form" (Form 10.04), which includes:

- A desired specific completion date. Completion dates are required so the Asbestos Coordinator can determine the PSCAA notice requirements and work schedule.

- The Facilities Services Requisition or Work Request Number of the related work. Abatement Contractor costs will be charged to requisitions, but will not be charged to shop function numbers.

- A copy of the Utility Shutdown Request (if appropriate). Utility Shutdown Requests will be coordinated with the Asbestos Coordinator.

c. Upon receipt of the Asbestos Abatement Request Form, the Asbestos Coordinator will schedule a site visit to establish a scope of work and not-to-exceed cost estimate. The "Asbestos Abatement Work Request Form" (UoW1115) will be issued by the Asbestos Coordinator to authorize the Abatement Contractor to proceed. Priority, scheduling, and method of removal will be established when the Work Request is authorized. The requester, and other parties affected by the work will receive a copy of the authorized Work Request.

d. When the abatement work is complete, the Asbestos Coordinator will inform the requester. When the Abatement Contractor completes and signs the Asbestos Abatement Work Request, and the Asbestos Coordinator accepts the work, a copy of the completed Work Request will be sent to the requester.

2. Urgent Situations

When immediate asbestos abatement is required, call the Asbestos Coordinator. **Do not proceed until abatement is done.**

Please see Appendix D for emergency phone numbers.

E. In-House Asbestos Work Activities

While the primary mechanism for asbestos abatement is the Abatement Contract, trained Facilities Services staff may perform some specific work in-house, for example wiring, installation/repair of electrical equipment, and work with <1% ACM. However, everyone must realize that handling asbestos is stringently regulated, and work must only be done by workers specifically trained to do such work. In the future, FS staff may perform other work but only after receiving specialized training.

All personnel who perform asbestos work must receive documented training in the procedures to be performed. Frequently, they must be certified, participate in the EH&S respiratory protection and asbestos medical surveillance programs, and be trained in the specific tasks to be performed. All in-house asbestos work requires prior approval by the Shop Supervisor and the Asbestos Coordinator. See definitions for categories of work and training/certifications required.

General procedures of in-house asbestos work activities are:

1. The employee completes an Asbestos Work Permit Request (Form 10.11), including a description of the maintenance activity to be performed, and the size and location of the project.

2. The Supervisor/Manager reviews the proposed procedures and forwards the request to the Asbestos Coordinator for approval, and a draft of the notifications to L&I and PSCAA, if necessary (including any fees).

Upon approval, the Asbestos Coordinator assigns a work permit number to the task and coordinates with the Hazardous Materials consultant to accomplish air monitoring of the workers and of the area, as needed. The Asbestos Coordinator reviews draft notifications and adds information, if needed, and forwards to EH&S.

EH&S reviews and forwards draft notifications and provides the final copy to L&I and PSCAA, as necessary.

Perform the work in accordance with the requirements of the work permit and applicable procedures and regulations. Work must be done under the supervision of a Competent Person as defined by WAC 296-62-077.

Complete project documentation and forward to the Asbestos Coordinator.

F. Documentation and Recordkeeping

It is the responsibility of the Facilities Services Asbestos Office, Facilities Services Division Offices, Engineering Services, and EH&S to maintain files for the permanent records described below. A list of separate files to be maintained is presented below:

1. Maintenance and Alterations and Campus Operations

   a. Hazardous Materials Abatement Contract - Bidding/negotiating documents, plans and specifications, bids, contracts, contract administration documents and correspondence, pre- and post-job submittals, pay requests, and certificates of completion must be maintained permanently.

   b. Abatement Project Files - All asbestos-related correspondence from the shops, building coordinators, management, consultants, contractors, and regulatory agencies must be maintained for life of the building or at least 30 years. The following shall be maintained permanently:

      - Asbestos Abatement Request Form
      - Asbestos Abatement Work Requests
      - Abatement Work Plans
      - Disposal Certificates - including the water-shipment record, receipt from the hauler, and receipt from the landfill.
      - Air Monitoring Results - These include ambient-level or background tests and personal air monitoring for workers who perform tasks around asbestos-containing materials. For in-house work, these should be made available to employees as soon as possible after they are completed and maintained for a minimum of 30 years after the monitored employees leave the employment of the University. Presently, the air monitoring results for UW employees are kept on file with Environmental Health and Safety.

   Project Schedule - A day-to-day summary of all asbestos-related activity under this O&M Program is posted on the Asbestos/Lead/Hazardous Materials Operations & Maintenance Facilities Services website (www.washington.edu/admin/asbestos).

   d. Asbestos Surveys - The survey documentation is the University's record of asbestos-containing materials that have been identified in various buildings/locations. Surveys help determine the effects of activities on asbestos-containing materials. This file must be maintained permanently. Facilities Services Records Section is the primary department for retaining all building records.

   Periodic Surveillance Forms - It is recommended that surveillance of the physical condition of asbestos-containing materials be completed on an

annual basis. Each survey should be properly documented and maintained for 30 years.

Negative Exposure Assessments – Hazardous Materials Consultant or Asbestos Coordinator generates. Provide copy to EH&S. Maintain for a minimum of 30 years.

Notifications to UW Personnel -- The Asbestos Coordinator will provide the appropriate notifications to affected UW personnel.

2. Environmental Health and Safety

   a. Campus Health Service - Medical examination records are maintained for appropriate maintenance staff for a period of at least 30 years. The 30-year time period begins at the point of termination of employment or transfer of the employee to non-asbestos affected position. Medical records are confidential.

   b. U/W Incident Reports - Accidental disturbance of ACM must be reported immediately to the Asbestos Coordinator and Supervisor. A UW Incident Report form (UofW 1428) must be completed by the employee, reviewed by the supervisor and Division management, and sent online to EH&S. EH&S will maintain the permanent files.

   c. Asbestos Surveys - The survey documentation is the University's record of asbestos-containing materials that have been identified in various buildings/locations. These surveys help determine the effects of activities on asbestos-containing materials. This file must be maintained permanently. EH&S is the primary department for maintaining non-building ACM records.

3. Engineering Services

   a. Documentation on Public Works Projects - Engineering Services maintains documentation on public works abatement projects including asbestos surveys, asbestos project plans and specifications, and asbestos contract closeout documents (including field inspection reports). These records are sent to Facilities Services Records Section for permanent retention at completion of work.

   b. An index to engineering documents maintained by the Facilities Records unit of Engineering Services in available online (http://www.washington.edu/admin/facserv/records/services.html) to UW and non-UW personnel assigned a UWNetID. Asbestos-related

documents identified in the index may be viewed by UW and designated non-UW personnel, but only after previous authorization by EH&S.

5. Asbestos Evaluation and Assessment

A. Building Surveys

The Asbestos Coordinator collects all asbestos evaluation/assessment information and is the contact for shop personnel. In addition to the Asbestos Coordinator, the unit representatives are AHERA certified and may collect samples of suspect ACM, as needed. While in most cases, the Asbestos Coordinator will request that the Consultant conduct surveys and/or good faith inspections, FS employees who are AHERA certified may also collect samples in accordance with USEPA AHERA 40CFR Part 763.86 and WAC 296-62-07721.

Requests for information should be directed to the Asbestos Coordinator (information on the type and location of known asbestos-containing building materials is included in this document). Information about the location of ACM in University facilities includes:

1. **EH&S Surveys** - evaluation and assessment of potential ACM to meet the workplace health and safety policy requirements of the University is conducted by EH&S. When, as part of this evaluation, it is necessary to obtain material samples for analysis to determine asbestos content, this information is incorporated into the asbestos bulk sample database.

2. **Public Health Surveys** - EH&S has contracted with an outside consultant to provide asbestos building surveys for some campus buildings. These records are available for review in EH&S, the Asbestos Coordinator's office, and Engineering Services. The information can be used for guidance only, since building renovations since the surveys have changed some situations.

3. **Public Works Project Surveys** - When the estimated cost of a construction project exceeds $35,000, it is the responsibility of the Design Services Project Lead or Capital Projects Office Project Manager to request a "Good Faith Inspection Report". A "Request for Good Faith Inspection" will be initiated by Design Services, forwarded to the Asbestos Coordinator or Public Works Consultant, depending on the complexity of the project, to survey and evaluate the proposed work area for asbestos. The results of the evaluation are forwarded to the Asbestos Coordinator and Project Manager.

4. **Facilities Services Alterations Project Support** - For alterations projects, the Design Services Project Lead will complete the Asbestos Impacts Checklist and a "Request for Asbestos Bulk Sampling" form (Form 10.07). Upon approval by Design Services, the form will be forwarded to the Asbestos Coordinator who determines if data of the proposed work area are

available. If no data are available, the Hazardous Materials Consultant undertakes additional material sampling. The results of additional sampling and previous data will be forwarded to Design Services and the Asbestos Coordinator. If the complexity of the project design requires further review, the Asbestos Coordinator will provide additional support to the designer. Facilities Services employees performing alterations should be constantly aware of the possibility of coming across "hidden" ACM and follow procedures if it is discovered.

5. **Maintenance Activities** – Before proceeding with maintenance activities, any areas of potential asbestos disturbance must be identified.

   a. Use Safety Hazard Checklist (See Safety Practice 93-2a) to document that asbestos or other hazards do not exist

   b. If the potential for an asbestos hazard exists, research existing information (surveys, etc.) and consult with Asbestos Coordinator about material sampling of the proposed work area. If material is known or assumed to be asbestos, work can be done under the presumption that it involves ACM. An AHERA-accredited inspector is the only one who can confirm that possible ACM is <u>not</u> actually ACM. This finding has to be documented (such as in a Good Faith Inspection).

   If asbestos-containing materials are identified, the typical response will involve asbestos abatement by the Abatement Contractor, including removal and disposal; clean up; encapsulation or repair.

   If proper precautions and procedures are followed during pre-project planning, the risk affecting asbestos-containing materials is minimized. All appropriate employees, supervisors/managers, and trades workers must participate in the planning to ensure a safe work environment.

   If suspected ACM is disturbed, stop work and contact your supervisor or the Asbestos Coordinator. Do not continue work until personal and co-worker safety is assured.

B. Other Inspections, Evaluations, and Assessments

1. **General Industry** – Asbestos may be found in non-building materials (such as gaskets or automobile brake pads). If the item's documentation does not confirm a suspect material is non-asbestos, an AHERA-accredited inspector should sample it before maintenance work is done.

2. **Daily Evaluations (Periodic Surveillance)** - During routine maintenance activities, employees of Facilities Services should observe and be aware of the condition of known ACM in the building. Pay particular attention to

any physical changes, such as color change, delamination from the applied surface, water damage, deterioration, or damage due to routine maintenance procedures and accidental contact. Daily evaluations are informal and ongoing. When changes in condition are found, report the following information to the supervisor/manager:

Type of ACM

Type of damage or change of condition of the material

Location of ACM (include concerns regarding accessibility and traffic)

The Supervisor will contact the Asbestos Coordinator and initiate an "Asbestos Abatement Request". The Asbestos Coordinator will arrange a formal inspection of the area.

C. Asbestos Access Program

EH&S maintains an Asbestos Area Restricted Access Program to manage any space that has a potential for producing airborne asbestos where appropriate precautions must be taken to prevent personal exposure. Factors for determining risk potential include: asbestos content, condition, friability, location, accessibility, and controls in place.

Documenting, posting and securing of each identified restricted access are an ongoing process. EH&S investigates reports of areas that may contain asbestos or that may pose a public health hazard. Findings are incorporated into the Asbestos Area Restricted Access Program on the UW asbestos website (www.washington.edu/admin/asbestos).

Access to these identified spaces is not categorically prohibited, but entry always warrants special knowledge and usually requires personal protective measures and/or controlled entry procedures. Entry is permitted only with approval and coordination of EH&S or the Asbestos Coordinator to ensure worker safety.

Spaces with restricted access are under the control of EH&S and may not be entered without consultation with EH&S on the known conditions and requirements for controlled entry. Facilities Services employees should contact the Asbestos Coordinator (206-685-3357) for information about access.

A listing of the locations of these spaces is maintained online by EH&S (www.washington.edu/admin/asbestos) and distributed to campus units. Three listings are included:

1. Asbestos Area Restricted Access Report - areas for which abatement, engineering controls, personal protective equipment, supervision and/or

training are required. The degree of severity varies, as each space is different.

2. Worker Advisory Access Report - areas that do not pose an active worker hazard, but are designated as potential hazards because they are being evaluated or because they may require action if asbestos material is disturbed through natural or human causes. A "Worker Advisory" has been posted at the entrances to some spaces and EH&S performs periodic surveillance (visual assessment and air monitoring) to determine if there is deterioration. Workers should exercise special care and immediately report any sighting of damaged or deteriorated ACM.

3. No-Longer-Restricted Access Report - areas in categories 1 or 2 for which the hazards have been remediated.

Workers should check the Asbestos Access Report online (www.washington.edu/admin/asbestos) when planning work.

6. Safe Work Practices for All Employees

A. General

Compliance with rules and safe work practices ultimately depends on individual performance. All employees should be aware of and adhere to the following warning.

When in doubt about the possible asbestos impacts of your task:

1. Stop work;

2. Contact your supervisor or other reliable source of asbestos information to determine whether work can proceed safely; and

3. Continue work only when personal safety and that of others is assured.

B. Procedures for Working Around or Near Asbestos-Containing Materials

Before performing maintenance activities, all employees are responsible for becoming aware of the location and condition of known ACM within the work area. Proper precautions and procedures taken in the pre-project planning stages will minimize or eliminate the potential for affecting asbestos.

Supervisor/Lead must be especially diligent in evaluating possible ACM involvement for work performed by multiple shops/trades, or if the scope of work changes.

General operating procedures for all work by Facilities Services employees include the following:

1. Review the scope of work to be performed giving specific attention to materials suspected of containing asbestos (see Appendix B).

2. Before beginning the project, discuss potential asbestos impacts with the Supervisor (or Project Manager) and contact the Asbestos Coordinator if necessary to determine the location of identified ACM within the project area. Check the EH&S Restricted Access Report online (www.washington.edu/admin/asbestos).

3. Review the survey information and scope of work to identify known asbestos hazards and potential disturbances. If conditions warrant additional material sampling, shop employees should contact their Supervisor, who in turn will contact the Asbestos Coordinator.

4. If ACM is present, the employee must evaluate the condition of the material and determine the potential for disturbance that may result from the work activity.

5. With concurrence from the Supervisor and/or the Asbestos Coordinator, work in the vicinity or around asbestos-containing materials can proceed. In performing the work activity, every precaution is to be exercised by the employee to eliminate the potential of disturbing the asbestos. The precautions will vary with the type of work performed, the type of asbestos material present, and the nature of the work area.

7. Asbestos Spill/Release Response Procedures

Special procedures are necessary in the event of a small or large release of airborne asbestos fibers. The goal is to protect human health by limiting, to the extent possible, contamination of the building environment. If an individual causes or discovers an asbestos fiber release situation, expedient, yet controlled, actions must be taken as follows:

1. **Don't panic**; take a calm and orderly approach.
2. **Stop work activities.** Do not attempt to clean up the debris. Improper cleaning may create a greater hazard.
3. **Restrict access**. If the material is in an area where other individuals may come into contact with it, secure the area to restrict access prior to calling for assistance. If possible, close the door to the space where the disturbance occurred; otherwise rope off or barricade the area.

4. **Contact the FS Asbestos Office,** and notify them of the situation. Be prepared to provide the following information to the Asbestos Office:
    - Location and type of material disturbed (provide building name, floor, and other pertinent details.)
    - Activity that created the disturbance
    - Personnel involved
    - Time the disturbance occurred or was first observed
    - Any actions taken (e.g., isolation of area)
5. After Steps 1-4 are performed, the FS Asbestos Office will evaluate the fiber release situation and work closely with the Consultant and Term Abatement Contractor, who will provide a hazard assessment and clean up, as needed. Only Certified Asbestos Abatement personnel will perform such cleanup.

Restricted Area - The area of the release is a restricted area and all non-asbestos certified personnel are prohibited from entering the work area. When the contaminated area has been cleaned and inspected, and air monitoring indicates that airborne fiber concentration is below acceptable regulatory levels, the Asbestos Coordinator will post a clearance form and the area is cleared for re-occupancy.

Spill Differential: Incident v. Emergency

Although response actions by maintenance personnel to an asbestos spill/release will be the same regardless of size of the spill/release, asbestos management professional will identify a spill/release according to size of the spill. Two situations may be considered:

- An **asbestos incident** involves the disturbance of a small amount of ACM in a localized area (less than three square or three linear feet).
- An **asbestos emergency** involves the disturbance of a large amount of ACM (greater than three square feet or three linear feet) or a catastrophic occurrence (such as a large scale fire or earthquake.)

The FS Asbestos Office is to be notified of all disturbances of ACM whether they are considered to be an incident or an emergency. Refer to Appendix D for current contact names and numbers.

Events that can cause Emergency Asbestos Spill/Release

Examples of events which disturb ACM so as to cause a large release of asbestos fibers into the air resulting in contamination of the building environment include:

- Improperly planned or executed renovation or remodeling activities.
- Construction procedures or equipment causing excessive vibrations such as, coring, jack hammering, or vibrations from other mechanical construction devices.
- Fires and water damage in response to the fire.

- Water damage from roof leaks, pipe breaks, or other means.
- Earthquake, explosion, structural failure of other catastrophic building movements.

Special procedures must be followed if asbestos is disturbed, possibly creating a fiber release. The goal is to protect human health by limiting, as much as possible, contamination of the building environment.

APPENDICES

Section **# of Pages**

Definitions/Acronyms

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

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 have been chemically treated and/or altered. For purposes of this standard, **"asbestos"** includes PACM, as defined below.

Asbestos abatement project means an asbestos project involving three square feet or three linear feet, or more, of asbestos-containing material.

Asbestos-containing material (ACM) means any material containing more than 1% by weight of asbestos of any type or mixture of types.

Asbestos project - definition as stated in WAC 296-62-077.

Authorized person means any person authorized by the employer and required by work duties to be present in regulated areas.

Certified asbestos supervisor means an individual certified by the department under WAC 296-65-012.

Certified asbestos worker (CAW) means an individual certified by the Washington State Department of Labor and Industries under WAC 296-65-010 to perform asbestos abatement work.

Class I asbestos work means activities involving the removal of thermal system insulation or surfacing (ACM/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, may 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.

Clean room means an uncontaminated room having Facility for the storage of employees' street clothing and uncontaminated materials and equipment

Competent person means, in addition to the definition in WAC 296-62-07728, one who is capable of identifying existing asbestos, hazards in the workplace and selecting the appropriate control strategy for asbestos exposure, who has the authority to take prompt corrective measures to eliminate them as specified in WAC 296-62-07728. The competent person shall be certified as an asbestos supervisor in compliance with WAC 296-65-030(3) and 296-65-012 for Class I and Class II work, and for Class III and Class IV work involving 3 square feet or 3 linear feet or more of asbestos-containing material. For Class III and Class IV work, involving less that 3 square feet or 3 linear feet, the competent person shall be trained in an operations and maintenance (O&M) course which meets the criteria of EPA (40 CFR 763.92(a)(2)).

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 contaminated with asbestos.

Demolition means the wrecking or taking out of any load-supporting structural member and any related razing, removing, or stripping of asbestos products. Where feasible, asbestos-containing materials shall be removed from all structures prior to the commencement of any demolition activity as per WAC 296-155-775(9).

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. This term includes activities that disrupt the matrix of ACM or PACM, render ACM or PACM friable, or generate visible debris. Disturbance includes cutting away small amounts of ACM or PACM, no greater than the amount that can be contained in one standard size glove bag or waste bag in order to access a building or vessel component. In no event shall the amount of ACM or PACM so disturbed exceed that which can be contained in one glove bag or waste bag which shall not exceed 60 inches in length and width.

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

Environmental Protection Agency (EPA) is the federal agency that regulates protection of the environment and public safety.

Equipment room (change room) means a contaminated room located within the decontamination area that is supplied with impermeable bags or containers for the disposal of contaminated protective clothing and equipment.

Fiber means a particulate form of asbestos, five micrometers or longer, with a length-to-diameter ration of at least three to one.

Friable asbestos refers to any materials that contain greater than 1% asbestos and which can be crumbled, pulverized or reduced to powder by hand pressure. This may also include previously non-friable material that becomes broken or damaged by mechanical force.

Glove bag means not more than a 60 x 60-inch impervious plastic bag-like enclosure affixed around an asbestos-containing material, with glove-like appendages through which materials and tools may be handled.

HEPA filtered vacuum is a high-efficiency particulate air (HEPA) filtered vacuum capable of trapping and retaining 99.97% of all particles larger than 0.3 microns.

Heterogeneous not having the same composition throughout

High-efficiency particulate air (HEPA) filter means a filter capable of trapping and retaining at least 99.97 percent of all monodispersed particles of 0.3 micrometers mean aerodynamic diameter or larger.

Homogeneous area means an area of surfacing material or thermal system insulation that is uniform in color and texture.

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.

L&I (Washington State Department of Labor and Industries) is the agency that regulates protection of the worker in the state of Washington.

Micron is equivalent to one millionth of a meter.

Negative initial exposure assessment (NEA) means a demonstration by the employer (which complies with the criteria in WAC 296-62-07709) that employee exposure during an operation is expected to be consistently below the PELs.

Negative pressure respirator means a tight-fitting respirator in which the air pressure inside the face piece is lower then the ambient air pressure outside the respirator during inhalation.

Non-friable asbestos is material that contains greater than 1% asbestos by weight and is not capable of being crumbled, pulverized or reduced to powder by hand pressure.

PACM means "presumed asbestos-containing material."

Permissible exposure level (PEL) refers to a level of airborne fibers specified by WISHA as an occupation exposure standard of asbestos. It is 0.1 f/cc of air, 8-hour time-weighted average as determined by the method prescribed in the WAC (or equivalent).

Positive pressure respirators are respirators that function by or providing filtered, pressurized air to the wearer.

Powered air purifying respirator (PAPR) is a respirator of the positive pressure type, designed to force air from the area in use through a HEPA-filter cartridge into a face piece.

Project designer means a person who has successfully completed the training requirements for an abatement project designer established by 40 U.S.C. 763.90(g).

Puget Sound Clean Air Agency (PSCAA) is the agency that regulates protection of the environment and public safety in King, Snohomish, Kitsap and Pierce counties in the state of Washington.

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 can reasonably be expected to exceed the permissible exposure limit. Requirements for regulated areas are set out in WAC 296-62-07711.

Removal means all operations where ACM and/or PACM is taken out or stripped form structures or substrates, and includes demolition operations.

Renovation means the modifying of any existing vessel, vessel, section, structure, or portion thereof.

Repair means overhauling, rebuilding, reconstructing, or reconditioning of vessels, vessel sections, structures or substrates, including encapsulation or other repair of ACM or PACM attached to vessels, vessel sections, structures or substrates.

Self-contained breathing apparatus (SCBA) refers to a face-piece and tank air supply which allows the worker to be independent to his/her surrounding atmosphere and, therefore, these can be used in atmospheres immediately harmful to life.

Supplied air respirator, type "C" is a respirator with its own air supply (either through the use of Grade D breathing air compressors or cylinders) which protects against high concentrations (i.e., to 100 times the prescribed OSHA limits) of dusts, mists, vapors, fumes and gases.

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).

Surfacing ACM means surfacing material that contains more than 1% asbestos.

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

ACRONYMS

AC	Asbestos Coordinator
ACM	asbestos-containing material
AHERA	Asbestos Hazard Emergency Response Act
CAS	Certified Asbestos Supervisor
CAW	Certified Asbestos Worker
CEO	UW/FS Campus Engineering & Operations
EH&S	UW Department of Environmental Health and Safety
EPA	Environmental Protection Agency
FS	UW Facilities Services
GFI	Good Faith Inspection
GFCI	ground fault circuit interrupter
HEPA	high efficiency particulate air filter
HVAC	heating, ventilation and cooling
L&I	Washington State Department of Labor and Industries
M&A	UW/FS Maintenance & Alterations
NEA	negative exposure assessment
O&M	Operations and Maintenance
OSHA	Occupational Health and Safety Administration
PACM	presumed asbestos-containing material
PAPR	powered, air-purifying respirator
PEL	permissible exposure limit
PPE	personal protective equipment
PSCAA	Puget Sound Clean Air Agency
PVC	poly-vinyl chloride
RPM	revolution per minute
SCBA	self contained breathing apparatus
TSI	thermal systems insulation
UW	University of Washington
WAC	Washington Administrative Code

Asbestos-Containing Building Materials and Products

There are two basic physical classifications of asbestos-containing materials (ACM): "friable" and "non-friable". Friable materials are those than can be crumbled, pulverized, or reduced to a powder by hand pressure when dry. Friable ACM may include sprayed-on and troweled-on fireproofing, acoustical ceiling finishes and certain ceiling tiles. Friable materials are the most likely to release asbestos fibers into the air.

Non-friable asbestos-containing materials contain asbestos fibers embedded in a hard and/or sticky material (binder). Examples of non-friable asbestos-containing materials are resilient floor tiles, electrical wiring insulation (AF150C), and roofing materials. Renovation and demolition activities can make non-friable materials friable through various mechanical activities such as breaking, gouging, sawing and drilling. In addition, damage from water or physical contact of maintenance or other activity could cause non-friable ACM to become friable. ACM can become more friable with age, through degradation or erosion, if not properly maintained.

Important Note: Under no circumstances may ACM, suspect ACM or PACM be taken to surplus. This includes valves, ovens, gaskets, wiring, motors, refrigeration units, incubators, sinks with undercoating, lab countertops and fume hoods. Through the Asbestos Coordinator, the Term Abatement Contractor may be contacted to dispose of these properly.

The Project Manager's Reference Document for Environmental Stewardship was developed in the winter of 2000 through a joint effort involving representatives from Environmental Health and Safety, Engineering Services, Capital Projects Office and Facilities Services. The purpose of this document is to provide general guidance to help assure a consistent approach to meeting environmental regulations associated with construction and renovation projects.

Regulations associated with the environment, including asbestos, are subject to change. Therefore, the Project Manager's Reference Document for Environmental Stewardship is organized as a series of environmental bulletins that may be updated and redistributed independently of the whole document. The document is maintained by Environmental Health and Safety. Bulletins are revised and distributed to the Capital Projects Office and Facilities Services as updates are published. The document is available online at http://www.ehs.washington.edu/Construct/PMRef.htm.

Examples of asbestos-containing materials are presented below:

Summary of Asbestos-Containing Products[1]

Product	Avg. % Asbestos	Binder	Dates Used
Friction products	50	various polymers	1910 - present
Plastic products			
floor tile and sheet	20	PVC, asphalt,	1950 - present
coatings and sealants	10	asphalt	1900 - present
rigid plastics	<50	phenolic resin	? - present
Cement pipe and sheet	20	Portland Cement	1930 - present
Paper products			
roofing felt	15	asphalt	1910 - present
Gaskets**	80	various polymers	? - present
corrugated paper pipe wrap	80	starches, sodium silicate	1910 - present
other paper	80	polymers, starches, silicates	1910 - present
Textile products	90	cotton, wool	1910 - present
Insulation and decorative products			
spray coating	50	Portland Cement, silicates, organic binders	1935 - 1978
troweled coating	70	Portland Cement, silicates	1935 - 1978
preformed pipe wrap	50	magnesium carbonate, calcium silicate	1926 - 1975
insulation board	30	silicates	unknown
boiler insulation	10	magnesium carbonate, calcium silicate	1890 - 1978
Other uses	<50	many types	1900 - present

**Several gasket inspection work orders were received to inspect existing and replacement gasket materials used by UW Maintenance Personnel. The materials were either confirmed to be non-suspect ACM or were sampled. All materials were photographed and the appropriate laboratory or inspector comments were placed with the photographs in a photographic report for work done under each work order. The final gasket survey book containing information from all gasket related work orders was issued to the UW Asbestos Office and to selective Maintenance Supervisors. It is presumed that additional work orders will require more sampling of different materials and the results will be added to the manuals at that time.

[1] United States Environmental Protection Agency, Publication No. EPA/530-SW-85-007, May 1985, entitled Asbestos Waste Management Guidance; Generation, Transport, Disposal

General Asbestos Work Procedures

No asbestos work will be authorized until a work permit is submitted, reviewed, and approved (See Asbestos Work Activities).

The procedures outlined in this section must be used with the Specific Asbestos Work Procedures contained in the following section only by authorized personnel. Authorized personnel are defined as employees who (1) have completed formal training required for the classification of work, (2) are participants in the UW's medical monitoring program, (3) possess a suitable respirator for which they are currently fit-tested, and (4) are under the supervision of a Certified Asbestos Supervisor/Certified Competent Person.

General asbestos work procedures include:

1. Tools, Equipment and Supplies
2. Work Area Preparation
3. Personal Protection
4. Air Monitoring Plan
5. Clean-up/Decontamination/Demobilization
6. Disposal
7. Documentation
8. Procedures for Asbestos Incident or Emergency

1. Tools, Equipment and Supplies

Collect and assemble all tools, equipment and materials necessary to perform the work. Check condition and operation to see that all function properly. **Chemical mastic removers are prohibited on all UW campuses.**

Common tools and equipment required for most asbestos-related work include the following.

1. Tools and Equipment
   a. utility knife or razor knife
   b. scraping tools, putty knife
   c. nylon pot scrubbers
   d. construction barrier tape
   e. ladders, scaffolding
   f. lockout tags
   g. extension cords, adapters, and GFCI's (Note: a ground fault circuit interrupter must be used on any electrical equipment or tool where water may be in use or present in the work area)
   h. temporary work lights

2. Personal Protective Equipment
   a. respirator: half-face, dual-cartridge with P100 filters
   b. disposable wet wipes
   c. disposable coveralls, footwear, headwear, rubber gloves
   d. eye protection
   e. air monitoring pumps, cassettes, and rotometer

3. Abatement Equipment and Materials
   a. 6-mil thick polyethylene (poly) sheeting
   b. duct tape
   c. spray adhesive
   d. asbestos warning signs and barrier tape
   e. surfactant wetting agent (for amended water)
   f. disposable towels/cloths or wet wipes
   g. bucket(s)
   h. source/supply of fresh water
   i. garden sprayer or hand sprayer
   j. aerosol cans or garden sprayer with lockdown encapsulant
   k. glovebags (if required)
   l. wet/dry HEPA vacuum with hose and attachments
   yellow disposal bags (6-mil) with approved labels

2. Work Area Preparation

Prepare the work area under the direction of a Competent Person and in accordance with the Work Permit, generally as follows:

1. Use only properly trained, competent, and respirator certified personnel. Inform building occupants of the work to be performed.

2. Bring all tools, equipment, and supplies into the work area. Identify ACM to be involved in work (and note if there is other ACM not included).

3. Turn off or isolate the heating, air conditioning, and ventilation so that there is no airflow across the work area.

4. Secure the work area to prevent unauthorized access by locking odors and windows, covering doors and windows with poly, and constructing temporary barriers as needed. Use translucent or black poly if a visual barrier is required.

5. If called for on the Work Permit, establish a regulated area with appropriate warning signs at all foot traffic approaches to the work area.

6. Put on two sets of disposable coveralls and a P100 dual-cartridge, half-face respirator or PAPR. Perform user seal check (if negative pressure respirator).

7. If called for in the air monitoring plan, attach personal air monitoring pump and cassette.

8. When practical, cover the floor in the vicinity of the work area, and six feet beyond, with a 6-mil poly dropsheet and duct tape the sheet in place. Perform all work over the drop sheet.

9. Clean the work area using wet methods, taking precautions to prevent airborne fibers.

3. Personal Protection

The UW Respiratory Protection Program covers employees who may be required to wear a respirator on the job. Medical monitoring is required for any employee who wears a negative pressure respirator or who may be exposed to either the Permissible Exposure Level (0.1f/cc) or the Short Term (30-minute) Excursion Limit (1.0 f/cc for at least 30 days per year). The UW Respirator Protection Program and the Medical Surveillance Program are part of the worker protection program.

Various other types of personal protective equipment (PPE) may be required depending on work (i.e., safety glasses, gloves, etc.). Workers required to wear PPE must have completed training concerning how to properly select, wear, maintain and ensure adequacy of the PPE. This training should be documented by supervisor/trainer.

4. Air Monitoring Plan

The employee is to contact the Asbestos Office (685-3357) who will coordinate with the Hazardous Materials Consultant to develop project-specific air monitoring plans to supplement historical air monitoring data. If the Asbestos Coordinator determines that historical air monitoring is available for specific maintenance tasks, and a negative exposure assessment is developed by the Competent Person for the current task, certain controls may not be required. These controls might include:

Critical barriers over the opening to the work area.
Other isolation methods verified by perimeter air monitoring.

5. Clean-up / Decontamination / Demobilization

Use the following procedures upon completion of the specific asbestos work procedures.

1. Mist the air of the general work area with water to bring potential airborne fibers to the dropsheet. HEPA vacuum and/or wet-wipe the work surfaces, dropsheet, and surrounding area upon completion of work.

2. Place all debris and asbestos-contaminated cleaning materials in 6-mil plastic bags.

3. Use wet methods to clean all equipment and tools used.

4. Apply lockdown encapsulant on the surface area of the materials where the asbestos was removed.

5. Seal all of the disposal bags: gently remove excess air, twist the neck, fold the twisted neck over (gooseneck), and tape the folded neck with duct tape to create an airtight seal (use HEPA vacuum, if available, to collapse bag). Wet-wipe the exterior of all the bags. Place the bags off the plastic sheeting

6. Using the HEPA vacuum, remove any gross contamination from disposable coveralls of each person involved. Step to the edge of the plastic and remove the outer set of coveralls turning them inside out while doing so. Carefully fold them up and place them in the center of the plastic. Lightly mist the entire sheet with amended water.

7. Remove the tape holding the plastic in place and carefully fold the plastic toward the center into a three-foot width. Roll the folded plastic into a tight roll and seal with duct tape. Place the roll into a 6-mil plastic disposal bag and seal the bag.

8. Place each clean and sealed disposal bag into a second properly labeled 6-mil disposal bag and seal the outer bag just as described in step number 4.

9. HEPA vacuum the area around the edges where the plastic sheet had been placed.

10. Still wearing respirator, remove the second set of disposable coveralls and place in an additional 6-mil plastic disposal bag. Thoroughly wash hair, face, and hands with disposable wet wipes. Pay special attention to the area around the outer edge of the respirator at the respirator-face seal.

11. Remove the respirator and wash face and hands thoroughly with disposable wet wipes.

12. If going directly to another work area, wet-wipe the respirator and cover the filter openings with duct tape. Otherwise, remove the filter cartridges and place in the

disposal bag. Wash the respirator and place it in a proper storage place where it can dry and not alter its shape.

13. Seal the disposal bag as described in step number 4 and place in a second labeled, 6-mil disposal bag as indicated in step number 7.

14. If applicable, turn off personal air monitoring pumps.

15. When the area has passed the clearance requirements established in the Air Monitoring Plan, remove all critical barriers and/or seals and properly dispose of as asbestos-containing waste in accordance with proper disposal procedures (below).

6. Disposal

At the completion of asbestos maintenance activities, all asbestos-containing wastes should be contained within a minimum of two 6-mil thick disposal bags of which the visible or outer bag is to be labeled with at least the following information:

DANGER
CONTAINS ASBESTOS FIBERS
AVOID CREATING DUST
CANCER AND LUNG DISEASE HAZARD

Also, label each bag with the name of the generator of the asbestos waste (University of Washington), the address of the facility that generated the waste and the date it was removed. This information must be permanently marked and must be readable without opening the container.

For the small amounts of asbestos waste expected to be generated during maintenance activities, the University will utilize the Maintenance Contractor under the Asbestos Abatement Maintenance Contract for collection and disposal. However, it is the responsibility of the employee performing asbestos work to coordinate with the Asbestos Coordinator for pickup of labeled waste by the Maintenance Contractor *at the work site*. Waste must be kept in a secure area while awaiting pick-up.

To initiate the disposal of asbestos-containing wastes, the Shop Supervisor or the Asbestos Coordinator will complete the "Requestor Asbestos Identification and Abatement Process". Unless otherwise given written approval by the Asbestos Coordinator, no asbestos waste is to be transported by Facilities Services personnel.

The Asbestos Abatement Term Contractor must comply with all EPA, DOT, PSCAA, L&I and King County regulations governing the transport and disposal of asbestos waste and provide a properly completed Waste Shipment Record for each movement of asbestos-containing waste from the building. It is the responsibility of the Asbestos Coordinator to maintain the appropriate "Chain of Custody" for asbestos waste materials and dump receipts.

Documentation

1. At completion of site work, annotate Work Request with amount of ACM removed and draw a simple layout showing area affected.

2. Provide original documentation of NEA information, air monitoring, and Permit to Work on Asbestos-Containing Materials to EH&S and forward copies of the Permit to Work on Asbestos-Containing Materials to the Asbestos Coordinator and the affected Shop.

   Note: If other ACM is still present, especially such things as mudded fittings on adjacent pipes, which were not involved in the project, note their remaining quantity on the Work Request.

Asbestos Incident or Emergency

If a disturbance of asbestos-containing material occurs, the following procedures should be followed by the person who identified the disturbance.

- Stop Work
- Restrict access to release area
- Do NOT clean up the material. This may cause more release.
- Stay in vicinity; do not track material around.
- Contact Asbestos Coordinator
- Contact EH&S
- If AC or EH&S not available contact Hazardous Materials Consultant
- Contact Hazardous Materials Abatement Contractor if others not available

Emergency Phone Numbers

During regular business hours:

Asbestos Coordinator		206.685.3357
	Cell:	206.910.5781
EH&S	Main:	206.543.7262
		206.221.3354
	Pager:	206.991.3601

Off Hours:

UW Police Department (explain the problem and ask them to page the EH&S duty officer	9-911 (from on-campus phone) 206.543.9331 (from off-campus phone)

An **asbestos incident** involves the disturbance of small amounts of ACM in small-localized areas, usually less then three linear or square feet.

If asbestos is disturbed, immediately initiate the following procedures with appropriately trained personnel:

1. Stop work. Do not attempt to clean up the debris. Improper cleaning may actually create a greater hazard.

2. Assess the situation and take appropriate action:

a. Notify the Asbestos Coordinator or EH&S of the situation to receive a hazard assessment and specific directions. Then immediately contact your supervisor, or higher-level management.

- Report the location and type of material disturbed, the activity that created the disturbance, the time the disturbance occurred, and any actions taken.

Report the names of all employees involved in the incident.

- The Asbestos Coordinator will mobilize the Abatement Contractor to respond.

- The Asbestos Coordinator or Supervisor/Manager will contact the Hazardous Materials Consultant to provide bulk sampling or air monitoring.

b. If the material is in an area where people are coming into contact with it (walking through it, in a classroom, etc.) secure the area to restrict access before calling for assistance. Close the door to the space where the disturbance occurred; rope off or barricade the area.

c. If the material is in an area where there is a direct air current blowing across it (adjacent to a fan, near return air ducts, etc.) seal off the air opening or shut down the HVAC, before calling for assistance.

3. If so directed, evacuate the work area, secure the work area, isolate the HVAC to the area, and notify the building coordinator.

4. Complete an **Incident Report online (www.washington.edu/admin/asbestos)**

An **asbestos emergency** involves the disturbance of large amounts of ACM, generally a visible release, or a catastrophic occurrence (such as a large-scale fire or earthquake).

An asbestos emergency may be caused by:

1. Improperly planned or executed renovation or remodeling activities.

2. Construction procedures or equipment causing vibrations such as coring, jack hammering, or vibrations from other mechanical construction devices.

3. Water damage from roof leaks, pipe breaks, or other means.

4. Fire and fire-fighting activities.

5. Earthquake, explosion, structural failure or other catastrophic building movements.

Response to an asbestos emergency (or larger emergency with an asbestos component) is the same as for responding to emergencies in general:

- Priority 1 - life safety
- Priority 2 - protection of property
- Priority 3 - restoration of operations

Response to an asbestos emergency will be coordinated directly through the Asbestos Coordinator. The Abatement Contractor will perform cleanup and/or abatement, with limited assistance from shop employees as coordinated by the Asbestos Coordinator (e.g., directing utility shutdowns, etc.).

In the event of an emergency where asbestos is disturbed, immediately initiate the following procedures with appropriately trained personnel:

Stop work. Do not attempt to clean up the debris. Improper cleaning may actually create a greater hazard.

Notify the Asbestos Coordinator of the situation to receive a hazard assessment and more specific directions. Then immediately contact your supervisor, or manager.

Report the location and type of material disturbed, the activity that created the disturbance, the time the disturbance occurred, and any actions taken.

Report the names of all employees involved in the incident.

The Asbestos Coordinator will contact the Hazardous Materials Consultant to provide air monitoring.

The Asbestos Coordinator will mobilize the Asbestos Contractor to respond.

Evacuate the work area.

Secure the work area to restrict access to the space (close the door, rope off or barricade the area, etc.).

If the material is an area where there is a direct air current blowing across it (adjacent to a fan, near return air ducts, etc.) seal off the air opening and/or shut down the HVAC.

The Asbestos Coordinator will determine the procedure for emergency abatement and clean up of the area. Until the contaminated area has passed a visual inspection and air monitoring indicates that airborne fiber concentrations are acceptable to the University, no employee, occupant or tenant may enter the area. If access is required, only properly trained and protected personnel (typically Certified Asbestos Workers) will be allowed to enter the area.

Appendix D

Asbestos Work Procedures

1. Work requiring Class II Material Specific 8 Hour Asbestos-Trained UW Employees

a. Remove Asbestos-Containing Built-up Roofing

Prior to starting work, fill out a Permit to Work on Asbestos Containing Material and submit it to the Asbestos Coordinator (AC) for approval. Have a Competent Person inspect the job and verify the roofing material will remain intact during job activities. Regulatory notification is not required for removal and disposal of non-friable asbestos-containing roofing material. (NOTE: L&I and PSCAA do not require notification on non-friable roofing materials. If the roofing material is friable or becomes friable then the Class II material specific workers cannot perform the removal)

This work practice explains the work required to remove small amounts of non-friable asbestos-containing built-up roofing or flashing for maintenance or repair work.

1. Permit to Work on Asbestos Containing Materials with approval from Shop Supervisor, EH&S and Asbestos Coordinator	**Required**
2. Class II Roofing Training (8 hours)	**Required**
3. Certified Asbestos Supervisor	**Required**
4. Personal Protective Equipment	▪ Safety Glasses ▪ Foot Protection ▪ Fall Protection ▪ Respiratory Protection ▪ Disposable coveralls
5. Engineering Controls: One or more of the following must be used.	▪ Wet Methods (usually not recommended) ▪ HEPA Vacuum ▪ Drop Cloths (required if using cutting machine) ▪ Manual methods
6. Air Monitoring	▪ Negative Exposure Assessment or Objective Data ▪ Personal breathing zone samples in no NEA

7.	Isolate work area from non-essential personnel and notify essential personnel of work	Asbestos barrier tape required
8.	Shut down adjacent roof level HVAC or isolate	
9.	Debris is regulated asbestos waste and must be labelled as non-friable asbestos-containing roofing material for disposal.	

Example

- Remove sections of asbestos-containing built-up roofing to perform patching, repair, or installation of equipment.

Work Practices

- Follow General Asbestos Work Procedures in Appendix C and the following:
- Compile additional tools, equipment and materials, including safety harness/warning line system and/or motion stopping system, hook knife, garden sprayer with amended water, scraper 2-3" (50-75 mm) wide stiff blade, replacement roofing materials and tools, rope for lowering bags
- Place tools, equipment and materials needed in work area.
- Roof level HVAC intakes must be isolated or shut off.
- Wet methods must be used to remove roofing materials unless the wet methods are not feasible or will create safety hazards. Wet methods and HEPA vacuuming do not need to be used if the job is less than 25 square feet **and** the material remains intact as long as manual methods are used to remove the material and no visible dust is created. In determining the 25 square feet, all material removed from the same roof on the same day must be included.
- The material must be removed intact. There will be no sanding, sawing, abrading, or grinding of the asbestos material.
- Cut around area to be removed using hand tools. Note that several layers may be present.
- Scrape up roofing and place into disposal bags. Remove any remaining roofing debris in removal area using scraper and place into disposed bags. Lower bags to ground.
- HEPA vacuum or wet wipe removal area. Use HEPA vacuum where needed to clean up ACM. Loose debris must be HEPA vacuumed immediately.
- Any removed asbestos containing material should be removed from the roof as soon as practicable, but no later than the end of the work shift.

- No dropping or throwing of asbestos containing materials to the ground. Unless the material is carried or passed to the ground at the end of the work shift by hand, it must be lowered to the ground via covered, dust tight chute, crane, or hoist.
- Once on the ground, any unbagged material must be double bagged, labeled, and placed in a secure dumpster
- Contact Asbestos Coordinator for verification of work completion.
- Requestor approves completed work and verifies abated area.

NOTE: STOP WORK IF SUSPECT ACM NOT INCLUDED IN THE SURVEY IS ENCOUNTERED AND CONTACT ASBESTOS COORDINATOR

1. Work requiring Class II Material Specific 8 Hour Asbestos-Trained UW Employees

b. Non-friable Asbestos Electrical Wire Insulation

Prior to starting work, fill out a Permit to Work on Asbestos Containing Material and submit it to the Asbestos Coordinator (AC) and EH&S for approval. Have a Competent Person inspect the job and verify the electrical wire insulation material will remain intact during job activities. Regulatory notification is required for removal and disposal of asbestos-containing electrical wire insulation if 10 linear feet or greater is removed. Annual notification with PSCAA is filed to cover these small jobs.

This work practice explains the procedures required to remove small amounts of asbestos-containing electrical wire insulation for maintenance or repair work.

1. Permit to Work on Asbestos Containing Materials with approval from Shop Supervisor, EH&S and Asbestos Coordinator	**Required (with required regulatory notifications)**
2. Class II Electrical Wire Insulation Training (8 hours)	**Required**
3. Certified Asbestos Supervisor	**Required**
4. Personal Protective Equipment	▪ Safety Glasses ▪ Foot Protection ▪ Fall protection ▪ Respiratory Protection ▪ Disposable coveralls ▪ Lockout/tagout equipment
5. Engineering Controls: One or more of the following must be used.	▪ Wet Methods (usually not recommended for safety reasons) ▪ HEPA Vacuum ▪ Drop Cloths ▪ Manual methods
6. Air Monitoring	▪ Coordinate with EH&S and AC ▪ Personal breathing zone samples ▪ Area sampling
7. Isolate work area from non-essential personnel and notify essential personnel of work	▪ Asbestos barrier tape and signage required
8. Shut down HVAC or isolate	
9. Debris is regulated asbestos waste.	

Contact AC for disposal by the Asbestos Abatement Term Contractor

Example

- Remove small sections of electrical wire insulation in order to splice another wire in
- Disconnection of electrical wiring in order to remove fixture

Work Practices

- Follow General Asbestos Work Procedures in Appendix C and the following:
- Bring all required gear into the area to be regulated. This includes setting up temporary lighting.
- Control access to the area with asbestos warning tape and signs. *Make sure to block <u>all</u> entrances to the suite and assure all occupants have left the area. Once the area is regulated, you must wear appropriate PPE inside of it.*
- Don respirator and coveralls.
- Lockout and tagout circuit.
- Lay plastic drop sheet under fixture where work will occur.
- Set up ladder.
- Access wiring. Carefully remove belly pan and inspect for visible wiring debris. If debris is visible, be careful not to spill it. If material is intact, work can proceed. If not intact, stop work and contact Asbestos Coordinator. HEPA vacuum debris and wet-wipe belly pan before setting it aside.
- If wiring is thermal plastic, continue. (*Note: workers do not have to be 8 hour trained to work on thermal plastic insulation. However they MAY NOT enter a regulated area).*
- If wiring is a known or suspected asbestos material, inspect for condition and visible debris.
- If material is not intact in some areas, but an intact section can be cut, wrap the intact wire in electrical tape, cut, and strip the wire *being careful not to disturb the non-intact portion of the wiring.* Be sure to dispose of any waste wire insulation in an asbestos disposal bag.
- If material is all non intact, STOP. Request that work be completed by CAW.
- After completing work, inspect ladder for visible dust. If any is present, wet wipe with a damp cloth (dispose of in asbestos waste bag) and HEPA vacuum the ladder.
- Inspect the plastic drop cloth for debris. If debris is present, wet it and roll up plastic being careful to keep all debris inside. Dispose of in an asbestos waste bag. If no debris is present, then plastic can be moved to next fixture.

- When all work is completed, assure no waste materials are left in the area, gooseneck all waste bags, and label them. HEPA vacuum protective clothing.
- Exit the regulated area.
- Remove the respirator and wash respirator, face and hands thoroughly with disposable wet wipes and cover cartridges with duct tape.
- Remove ALL tape and signs used to regulate area.
- Walkthrough area to assure all materials have been removed.
- A Work Request must be completed so that the Term Contractor can properly dispose of the waste.

NOTE: STOP WORK IF SUSPECT ACM NOT INCLUDED IN THE SURVEY IS ENCOUNTERED AND CONTACT ASBESTOS COORDINATOR

2. Maintenance and Repair Procedures for High Voltage Electrical Breakers That Contain Asbestos Materials

Prior to starting work, fill out a Permit to Work on Asbestos Containing Material and submit it to the Asbestos Coordinator (AC) and EH&S for approval. Have a Competent Person inspect the job and verify that the maintenance or repair operation will not disturb any friable asbestos material. Other than using the University Blanket Permit, regulatory notification is required for removal and disposal of asbestos-containing material if 10 linear feet or 48 square feet or greater is removed. If the Competent Person has conducted a Negative Exposure Assessment, some of the requirements for Personal Protective Equipment may be modified if approved by the Competent Person and by the University of Washington Environmental Health and Safety Office.

Electrical Breaker Maintenance Operation Where Breaker Assembly is not removed from the Breaker Cubicle

This work practice explains the procedures required to clean a breaker assembly and the internal spaces of a breaker cubicle in preparation for repair or maintenance operations and procedures to follow during the repair and maintenance operation. This procedure applies only to work performed on breakers that are not removed from the breaker cubicle. Breakers that will be removed and transported to a remote location for repairs will follow the work procedure specified for that procedure.

1. Permit to Work on Asbestos Containing Materials with approval from Shop Supervisor, EH&S and Asbestos Coordinator	**Required (with required regulatory notifications)** The Director of Plant Operations, or his designee, can declare an emergency and bypass the permit process after notifying the Competent Person.
2. Class II Intact High Voltage Electrical Equipment Training (8 hours)	**Required**
3. Certified Asbestos Supervisor	**Required**
4. Personal Protective Equipment	▪ Safety Glasses ▪ Foot Protection ▪ Respiratory Protection ▪ Disposable coveralls
5. Engineering Controls: One or more of the following must be used.	▪ Wet Methods (usually not recommended for safety reasons) ▪ HEPA Vacuum ▪ Drop Cloths ▪ Manual methods

6. Air Monitoring	▪ Coordinate with EH&S and AC ▪ Personal breathing zone samples ▪ Area sampling ▪ Pre-abatement and clearance air sampling
7. Isolate work area from non-essential personnel and notify essential personnel of work	▪ Asbestos barrier tape and signage required
8. Shut down HVAC or isolate	
9. Debris is regulated asbestos waste. Contact AC for disposal by the Asbestos Abatement Term Contractor	

Work Practices

- Coordinate pre-abatement air samples for all areas where asbestos materials will be disturbed.
- Follow General Asbestos Work Procedures in Appendix C. Exceptions to wetting provisions in Section E,3 are allowed near energized electrical equipment. Exception to requirement for two sets of disposable coveralls. One set is adaquate. The following work practices are also required:
- Bring all required gear into the area to be regulated.
- Control access to the area with asbestos warning tape and signs. *Make sure to block <u>all</u> entrances to the room and assure all occupants have left the area. Once the area is regulated, you must wear appropriate PPE inside of it.*
- Don respirator and coveralls.
- Lay plastic drop sheet under breaker assembly location where work will occur.
- Open the door to the breaker cubicle and inspect the breaker assembly and cubicle. If material is intact, work can proceed. If not intact, stop work and contact Asbestos Coordinator. HEPA vacuum or wet wipe with a solution approved for electrical work any debris on the assembly or cubicle.
- If repairs to the assembly can be made without disturbing asbestos materials, the regulated area may be removed and respiratory protection and covealls are no longer required. If disturbance of asbestos material is likely, the regulated area must be maintained, and respiratory protection and coveralls must be worn.
- Perform the maintenance or repair operations required.

- If asbestos containing wiring must be contacted or moved, follow the work procedure for non-friable asbestos wiring in Appendix D, 2, b of the University of Washington Operation and Maintenance Program.
- Inspect the plastic drop cloth for debris. HEPA vacuum the drop cloth and roll up being careful to keep all debris inside. Dispose of in an asbestos waste bag.
- When all work is completed, assure no waste materials are left in the area, gooseneck all waste bags, and label them. HEPA vacuum protective clothing and place into asbestos waste bag.
- Exit the regulated area.
- Remove the respirator and wash respirator, face and hands thoroughly with disposable wet wipes and place respirator catridges into asbestos waste bag
- Coordinate final air clearance samples before dismantling the regulated area.
- Remove ALL tape and signs used to regulate area.
- Walkthrough area to assure all materials have been removed.
- Seal asbestos waste bag with duct tape and drop waste bags at designated area for pick-up at the job-site. A Work Request is required for the Term Contractor to properly dispose of the waste.

Electrical Breaker Maintenance Operation Where Breaker Assembly is removed from the Breaker Cubicle and Transported to Remote Facility

This work practice explains the procedures required to clean a breaker assembly and the internal spaces of a breaker cubicle in preparation for repair or maintenance operations and procedures to follow during the repair and maintenance operation. This procedure applies only to work performed on breakers that are removed from the breaker cubicle.

1. Permit to Work on Asbestos Containing Materials with approval from Shop Supervisor, EH&S and Asbestos Coordinator	**Required (with required regulatory notifications)**
2. Class II Intact High Voltage Electrical Equipment Training (8 hours)	**Required**
3. Certified Asbestos Supervisor	**Required**
4. Personal Protective Equipment	▪ Safety Glasses ▪ Foot Protection ▪ Fall protection ▪ Respiratory Protection ▪ Disposable coveralls ▪ Lockout/tagout equipment
5. Engineering Controls: One or more of the	▪ Wet Methods (usually not

	following must be used.	recommended for safety reasons) ▪ HEPA Vacuumm with shroud or fixed ventillation system to accomplish local exhaust ventillation ▪ Drop Cloths ▪ Manual methods
6.	Air Monitoring	▪ Coordinate with EH&S and AC ▪ Personal breathing zone samples ▪ Area sampling ▪ Pre-abatement and clearance air sampling
7.	Isolate work area from non-essential personnel and notify essential personnel of work	▪ Asbestos barrier tape and signage required
8.	Shut down HVAC or isolate	
9.	Debris is regulated asbestos waste. Contact AC for disposal by the Asbestos Abatement Term Contractor	

Work Practices

- Follow General Asbestos Work Procedures in Appendix C. Exceptions to wetting provisions in Section E,3 are allowed near energized electrical equipment. Exception to requirement for two sets of disposable coveralls. One set is adaquate. The following work practices are also required:
- Coordinate pre-abatement air samples for all areas where asbestos materials will be disturbed.
- Bring all required gear into the area to be regulated.
- Control access to the area with asbestos warning tape and signs. *Make sure to block <u>all</u> entrances to the room and assure all occupants have left the area. Once the area is regulated, you must wear appropriate PPE inside of it.*
- Lay plastic drop sheet under breaker assembly location where work will occur.
- Don respirator and coveralls.
- Open the door to the breaker cubicle and inspect the breaker assembly and cubicle. If material is intact, work can proceed. If not intact, stop work and contact Asbestos Coordinator. HEPA vacuum or wet wipe with a solution approved for electrical work any debris on the assembly or cubicle. Seal the end of the HEPA vacuum with duct tape when not in use.

- Position lifting device under breaker assembly. Install double layer of 6 mil thick plastic on bottom of breaker assembly and secure with duct tape. Lift assembly and cover top section of assembly with double layer of 6 mil plastic. Secure top and bottom sections of plastic so that the container is air tight. Place an asbestos warning label on the plastic covering. If the assembly can be lifted without disturbing asbestos materials, the regulated area may be removed and respiratory protection and covealls are no longer required. If disturbance of asbestos material is likely, the regulated area must be maintained and respiratory protection and coveralls must be worn.
- If asbestos containing wiring must be contacted or moved, follow the work procedure for non-friable asbestos wiring in Appendix D, 2, b of the University of Washington Operation and Maintenance Program.
- When breaker assembly is wrapped and secured on lifting device, HEPA vacuum the lifting device and remove it from the regulated area.
- Inspect the plastic drop cloth for debris. Wet it and roll up plastic being careful to keep all debris inside. Dispose of drop cloth in an asbestos waste bag.
- When all work is completed, assure no waste materials are left in the area, gooseneck all waste bags, and label them. HEPA vacuum protective clothing.
- Wipe off all tools in the regulated area including the HEPA vacuum with wet wipes. Dispose of all used rags or wipes is asbestos waste bag.
- Exit the regulated area.
- Remove the respirator and wash respirator, face and hands thoroughly with disposable wet wipes and place respirator catridges into asbestos waste bag.
- Coordinate final air clearance samples before dismantling the regulated area <u>if asbestos materials have been disturbed during the work process.</u>
- Remove ALL tape and signs used to regulate area.
- Walkthrough area to assure all materials have been removed.
- Drop waste bags at designated area for pick-up. A Work Request is required for the Term Contractor to properly dispose of the waste.
- Transport the properly wrapped breaker assembly to the remote repair facility and place on workbench on plastic drop cloth.
- Control access to the area with asbestos warning tape and signs. *Make sure to block <u>all</u> entrances to the room and assure all occupants have left the area. Once the area is regulated, you must wear appropriate PPE inside of it.*
- If asbestos materials are not likely to be disturbed, the plastic covering on the breaker assembly may be removed in preparation for testing the breaker assembly without wearing a respirator and coveralls. If visible debris is evident inside the plastic covering, or if the

asbestos materials are likely to be disturbed, respirators and coveralls must be worn and the testing procedure must be performed inside of a regulated area.

- After the testing procedure has been completed and repairs to the breaker assembly are needed, don respirator and coveralls.
- If placed under fixed local exhaust ventilation system equiped with a HEPA filter, turn on ventilation system. If a portable HEPA vacuum is employed, equip with a metal or plastic shroud to expand the suction area and attach in close proximity to the location of repair work on the breaker assembly. Turn on HEPA vacuum. Use a ventillation smoke tube and aspirator bulb to assure air is drawn into the ventilation source.
- Perform maintenance or repair operations to breaker assembly. When repairs are completed, cover the assembly with a plastic bag or sheeting and place asbestos label on plastic for transport.
- Inspect the plastic drop cloth for debris. HEPA vacuum and roll up plastic being careful to keep all debris inside. Place drop cloth into an asbestos waste bag.
- When all work is completed, assure no waste materials are left in the area, gooseneck all waste bags, and label them. HEPA vacuum protective clothing.
- Exit the regulated area.
- Remove the respirator and wash respirator, face and hands thoroughly with disposable wet wipes and place respirator catridges into asbestos waste bag
- Coordinate final air clearance samples before dismantling the regulated area.
- Remove ALL tape and signs used to regulate area.
- Walkthrough area to assure all materials have been removed.
- Drop properly labeled waste bags at designated area for pick-up.
- Transport wrapped assembly to electical room for installation.
- If the assembly can be reinstalled without disturbing asbestos materials and a negative exposure assessment has been conducted for the task the regulated area is not required and respiratory protection and coveralls are not required. If disturbance of asbestos material is likely, the regulated area must be reinstalled, respiratory protection and coveralls must be worn, final air clearance sampling must be conducted and all cleanup and waste disposal procedures must be followed.

Appendix E

Special Work Procedures to Avoid Disturbing Asbestos

1. **Refinishing Floors**

Custodians will receive proper training consistent to the following guidelines, before being assigned to strip and refinish tile floors, especially those containing asbestos. Custodians will receive a minimum of two (2) hours of asbestos awareness training prior to being assigned to perform this work.

Dry Stripping (burnishing uncoated tiles), or Sanding of floors containing asbestos is **not** allowed and is prohibited by the Custodial Services Division.

Stripping of all asbestos-containing tile floors will only be allowed using the WET METHOD, where the floor **must** remain wet with the properly diluted stripping solution while the floor finish is being removed (scrubbed) with the buffing machine, using a **low-abrasive pad and low speed (<300 RPM)**. Additional solution should be applied to the (Asbestos) tile floor at the first sign of dryness to insure that asbestos material does not become airborne. The solution should be removed with a wet vacuum as the floor is being stripped and then be disposed of down custodial sink drains or floor drains.

When the undesirable floor finish is completely removed through stripping, in most cases a minimum of five (5) protective coats of fresh floor finish are applied to seal and finish tile floors. Special "sealer" finishes are not required, except for porous or "uneven" floors, such as terrazzo, ceramic, etc.

Polishing/burnishing of tile floors containing asbestos is allowed using floor-buffing machines with higher than 300 rpms (machines usually run at 1500 rpms). But polishing should be done only to floors which have sufficient floor finish (minimum of 5 coats) to insure floor polishing pads do not come in contact with bare asbestos tile. Floor finish that does not respond to buffing or burnishing by returning to a shine indicates that additional floor-finish coats need to be applied ("recoating").

Floors that contain asbestos tile are to be recoated after thorough cleaning with at least two (2) coats of finish when the floor remains dull.

ESSENTIAL STEPS:

PRELIMINARIES

Insure that all equipment needed is located at work site before starting any floor-stripping project. It is recommended that at least two employees be employed as a team to insure that floor solution does not dry. Below is listed equipment needed for floor stripping projects:

- 175 or 300 rpm buffer
- Black (low abrasive) stripping pad
- Blue stripping pad (very mildly abrasive)
- Two (2) 44-qt. mop buckets and wringers: one (1) for wet solution, and one (1) for pick up dirty solution.
- Two (2) 24-oz. wet mops and handles, one (1) for laying down wet solution, and one (1) for pick up.
- Dust mop
- Stripper (Stripping solution)
- Floor Finish
- Wet Floor Signs
- Safety goggles
- Rubber gloves
- Rubber boots
- Putty knife
- Floor edger ("Doodlebug")
- Stainless steel pads
- Cleaning sponge or cloth
- Neutral Detergent
- Wet/Dry vacuum (required when stripping asbestos-containing floor tile)
- If neutralizing is necessary
- One (1) 24-oz. wet mop for applying Neutralizer
- Neutralizing Packet

PREPARATION

- Dust mop floor.
- Place Wet Floor Signs around area to be stripped.
- Place towels or other appropriate material to block solution from flowing underneath doors to adjacent rooms.
- Lay down properly diluted stripping solution over area, leaving solution on floor typically between 30 to 45 minutes. (Some quick-acting strippers, such as Freedom Stripper, can be placed on floors for seven (7) minutes or so.)
- Lay solution on an area that can be handled comfortably at one time, as determined by the number of custodians involved.

- Keep area wet; rewet floor as necessary, while maintaining a dry path for foot traffic where necessary.
- Clean extraneous stripper: insure baseboards, cabinets, doors, etc. are cleaned immediately of any stripper. (Dry stripping solution discolors/damages wood, paint, and baseboards.)
- Important: Do not leave wet floors unattended.

STRIPPING THE FLOOR

- Use caution—Begin working the floor machine (less than 300 rpms) with a black (low-abrasive) stripping pad in a side-to-side direction over the entire area to be stripped.
- Insure that all the area is cleaned/scrubbed evenly and equally.
- After several passes over the entire floor surface to be stripped, and the solution thickens, wipe away a test area to see if the floor is free of finish.

SOLUTION REMOVAL

- Use a wet/dry vacuum on areas of floor that has been completely stripped of finish.
- Rinse floor with clean water a minimum of two (2) times when using the wet/dry vacuum.
- Only when determined necessary, apply neutralizing solution to floor, remove solution, rinse floor again, and remove solution.
- If a wet/dry vacuum is not used, rinse/mop floor a minimum of three (3) times (for non-asbestos-containing floors).

INSPECT WORK

- After rinsing floor, check floor corners and edges to insure no floor finish remains. Rework (restrip, rinse, recheck, etc.) all areas displaying remaining floor finish. Clean any stripping residue from surfaces that may have been splashed on, such as baseboards, cabinets, desks, files, doors, etc.

NEUTRALIZING

- Neutralizing insures floors finish will adhere to a stripped, clean floor surface; most floors are neutralized through normal rinsing.
- **When otherwise necessary,** use a neutralizing solution:
- Use a clean mop head (new one, or one used only for neutralizing).
- Use one (1) packet of Neutralizer in a mop bucket with four (4) to six (6) gallons of clean water.
- Apply neutralizing solution evenly over entire floor area.
- Allow floor to dry.
- After floor dries, inspect floor for evidence of dirt, etc.

SEALING

- Apply two (2) coats of floor finish to clean (stripped, rinsed, and if necessary, neutralized) floor tiles of entire area.
- Consult product label: Allow appropriate time (depending on product) for floor surface to dry between subsequent coats.

REFINISHING

- Apply two (2) coats of floor finish.
- Allow at least thirty (30) minutes or longer for the floor finish to dry between coats.
- Apply one (1) to two (2) coats of finish up to the edges of the designated area, blending in irregularities left by the mop. Do not apply as many coats along edges (one foot from wall) as the rest of the floor.

BURNISHING

- Floor finish should cure for at least 24 hours before hi-speed burnishing or recoating is performed.
- Dust mop (non-oiled mop) and then wet mop floor before burnishing floor.
- Burnish floor with hi-speed machine, using hi-speed burnishing pad.
- (Optional): Use Snap Back spray-on restorer (in spray bottle) or Revive mop-on restorer when burnishing floor to bring out shine/gloss.
- Repeat dust mopping of floor.
- Floor should be recoated with at least one (1) coat of floor finish after 4-5 times floor is burnished with hi-speed machines.
- Important: Do not burnish/buff damaged tile.

DAILY MAINTENANCE

- Dust mop floor daily.
- Spot (wet) mop daily or as needed.
- Wet mop floor completely weekly.

2. Removing Ceiling Tiles in Restricted Areas with Spray-on Fireproofing

All projects occurring above the ceiling of an identified restricted area and involving more than:

1. a visual inspection for design or engineering purposes, or
2. an air handling adjustment by the HVAC shop,

must be designed by an AHERA-accredited Project Designer, reviewed by the UW Competent Person and accepted by EH&S. A list of restricted areas may be viewed on the asbestos website (www.washington.edu/admin/asbestos).

Before removing any ceiling tiles where there is a restricted area with spray-on fireproofing above the ceiling, the Asbestos Coordinator must be contacted. The Asbestos Coordinator will arrange to have the ceiling tile surfaces and the ceiling grid in the impacted area(s) cleaned by the abatement contractor. If work will involve dragging equipment or reaching over other horizontal surfaces above the ceiling (such as ductwork, pipes or conduit), then the contractor must also clean those surfaces. Whenever possible, this additional cleaning should be included in the initial ceiling tile cleaning request.

The asbestos abatement term contractor tags the cleaned tiles with the date of cleaning and their company name. Ceiling tiles are considered "clean" for 60 days. If at any time suspect material is encountered above the ceiling, stop work and notify the supervisor. If the supervisor is not available, the Asbestos Coordinator should be contacted. Work should not resume until the Asbestos Coordinator and/or Environmental Health & Safety have evaluated the area.

3. Asbestos Door Cores

When working on any door, first check to see if the door has a UW label. If the door has a label that indicates that it does not contain asbestos, there are no worker protection issues.

If the door does not have this label, fill out a Consultant Work Request for Lead & Asbestos Form, or presume the door contains asbestos. If the results indicate no asbestos is present proceed with the work. However, no work may be performed on doors outside, on walkways, even with off campus buildings, to eliminate potential exposures, even to nuisance dust, to the public.

If the door has this label it does not contain asbestos. If the door does not have the UW label, fill out a Consultant Work Request for Lead & Asbestos Form, or presume the door contains asbestos. If the results indicate no asbestos is present proceed with the work. However, no work may be performed on doors outside, on walkways, even with off campus buildings, to eliminate potential exposures, even to nuisance dust, to the public.

If asbestos is found, follow the procedure described below.

If the lockset or any other hardware (kickplates, coat hangers, door closers, etc.) needs to be removed from an asbestos-containing door, or any other work that might disturb the core material is necessary, the work must be done by the Asbestos Abatement Term Contractor. If the door is to be removed, and is in good condition with no cracks or splits which could allow core material to spill out, then the hinge can be removed from the door jamb (not the door).

If in poor condition, fill out an Abatement Work Request for Lead and Asbestos to request the door be picked up and disposed of by the Term Abatement Contractor. No work on any door can be done outside on walkways, even at off campus buildings, to eliminate potential exposures to the public.

4. Concrete Floors where Asbestos Mastic is Abated

Grinding of concrete floors after asbestos-containing mastic has been removed is prohibited. Due to the porous nature of the concrete, mastic residue may remain embedded in the concrete. This is not a concern as long as the concrete material is not disturbed. Laying new carpet or new floor tile over the concrete is acceptable. If grinding is required as part of the floor preparation, it must be done by the asbestos term contractor as an abatement project. Bare concrete floors, floors with non-asbestos containing mastic and non-lead paint floors can still be leveled by the grinding process. Chemical mastic removers may not be used at any time.

5. Vehicle Brake and Clutch Repair

Since a limited number of brakes and clutches are inspected, disassembled and repaired, the following procedures will be followed: Work on brakes and clutches shall be performed using wet methods. Use of compressed air to blow parts clean is prohibited.

1. Permit to Work on Asbestos Containing Materials with approval from Shop Supervisor, EH&S and Asbestos Coordinator	**Required**
2. Asbestos Awareness Training (2 hours)	**Required** Additional training on WAC 296-62-07745 is required for asbestos brakes and clutches
3. Certified Asbestos Supervisor	Not Required
4. Personal Protective Equipment	▪ Safety Glasses ▪ Foot Protection ▪ Fall protection ▪ Respiratory Protection ▪ Disposable coveralls
5. Engineering Controls: One or more of the following must be used.	▪ Wet Methods ▪ HEPA Vacuum ▪ Drop Cloths ▪ Manual methods
6. Air Monitoring	▪ Coordinate with EH&S and AC ▪ Personal breathing zone samples ▪ Area sampling
7. Isolate work area from non-essential personnel and notify essential personnel of work	▪ Asbestos barrier tape and signage required
8. Debris is regulated asbestos waste. Contact AC for disposal by the Asbestos Abatement Term Contractor	

Example

- Remove or repair automotive brakes

Work Practices

Assemble equipment and materials

- Amended water and sprayer
- Duct tape
- Asbestos waste bags
- 6 mil sheet poly
- Rags
- Other equipment required for typical repair work

Bring all gear to the work area.

Confirm the Asbestos Work Permit provides a way to contact the Competent Person for the project.

Put on all required protective clothing as indicated on Asbestos Work Permit (respirator/coveralls)

Do not start work until air monitoring has started (if required by the Asbestos Work Permit)

Mist the brakes and/or clutch parts using a spray bottle or hose nozzle with a fine mist of amended water.

Use a cloth to wipe the brake and clutch components clean.

Dispose of cloth as asbestos-contaminated.

Dry brushing and use of compressed air is prohibited.

6. Drywall and Drywall Compound

Cutting or Drilling Asbestos-Containing Joint Compound on Non-Asbestos Drywall

This work practice covers the procedures for cutting or drilling of a small area of asbestos-containing joint compound on non-ACM drywall.

1. Two (2) Hour Asbestos Awareness Training	**Required**
2. Certified Asbestos Supervisor is not required	
3. Personal Protective Equipment	▪ Safety Glasses ▪ Foot Protection
4. Air Monitoring	▪ Negative Exposure Assessment or Objective Data
5. Engineering Controls: One or more of the following must be used.	▪ Wet Methods ▪ HEPA Vacuum ▪ Drop Cloths ▪ Wet Sponges or shaving cream
6. Isolate work area from non-essential personnel and notify essential personnel of work	
7. Shut down HVAC, if possible	
8. Debris is non-regulated asbestos waste and may be disposed of as general construction waste	

Examples

- Install new electrical receptacle or ceiling junction box in asbestos-containing joint compound and non-asbestos drywall.
- Drill holes to attach conduit to asbestos-joint compound on drywall powered hand tools.
- Drill holes to attach boards and shelving to asbestos-joint compound on drywall powered hand tools.

Work Practices

- Air monitoring is required until objective data and a negative exposure assessement is obtained.
- Compile tools, equipment and materials, including a hand drill or hole saw if needed. Power tools should have a HEPA filtered dust collection system. Maintenance work materials and wet sponges or shaving cream should also be included.

- Mark area to be cut or drilled. Avoid cutting or drilling the joints if possible.
- Adequately wet area to be cut using garden sprayer with amended water. As alternate methods, holes can be drilled/cut through a wet sponge or shaving cream on both sides.
- Cut new hole using utility knife, hand tools or power tools with HEPA filtered dust collection. Wet the cutting area using amended water during cutting or drilling.
- Remove piece of cut drywall and place into disposal bag. If wet sponges were used, place sponges into disposal bag.
- HEPA vacuum removal area and areas accessible from hole.
- HEPA vacuum and wet wipe up any accessible dust or debris generated on back side. Wet wipe drop cloth and surfaces adjacent to area where hole was cut or drilled. Remove drop cloth and place into disposal bags.
- Clean up area including any debris and all equipment used.

NOTE: STOP WORK IF SUSPECT ACM NOT INCLUDED IN THE SURVEY IS ENCOUNTERED AND CONTACT ASBESTOS COORDINATOR.

7. Remove Section of Asbestos-Containing Joint Compound on Non-asbestos Drywall

This work practice describes the work required to remove an area of or non-ACM drywall with ACM joint compound.

1. Two (2) Hour Asbestos Awareness Training	**Required** Until a NEA is established, 8-hour training is required.
2. Certified Asbestos Supervisor is not required	
3. Personal Protective Equipment	▪ Safety Glasses ▪ Foot Protection
4. Air Monitoring	▪ Negative Exposure Assessment or Objective Data
5. Engineering Controls: One or more of the following must be used.	▪ Wet Methods ▪ HEPA Vacuum ▪ Drop Cloths ▪ Wet Sponges or shaving cream
6. Isolate work area from non-essential personnel and notify essential personnel of work	
7. Shut down HVAC, if possible	
8. Debris is non-regulated asbestos waste and may be disposed of as general construction waste	

Example

- Remove area of asbestos-containing joint compound on drywall in good condition to install a new door frame.

Work Practices

- Compile tools, equipment and materials, including hand tools and pry bars.
- Prepare work area with drop cloth.
- Place tools, equipment and materials needed onto drop cloth.
- Adequately wet entire area of drywall to be removed using garden sprayer with amended water.
- Cut around perimeter of area to be removed. Wet cutting area with amended water during cutting.

- If drywall remains attached to studs or substrate, use pry bar to pull sheet out enough so edge can be gripped with hands. Mist cavity behind drywall and back side of drywall to be removed with amended water.
- Pull sheet out so sheet folds at fastener line or sheet is pulled away from fasteners. Adequately wet fold or holes from fasteners.
- Repeat the last step at other attachment points, remove drywall piece, and package for disposal.
- Remove fasteners from studs or substrate and place into disposal bags. Clean any debris left on studs or substrate using amended water and nylon brush.
- Pick up any debris and place into disposal bags. HEPA vacuum and wet wipe up any dust generated.
- Contact Asbestos Coordinator for verification of work completion.
- Requestor approves completed work and verifies abated area.

NOTE: STOP WORK IF SUSPECT ACM NOT INCLUDED IN THE SURVEY IS ENCOUNTERED AND CONTACT ASBESTOS COORDINATOR

8. Asbestos-Containing Roof Coatings, Cements, and Mastics

This work practice explains the work required to remove a small amount of asbestos-containing roof coatings, cements, and mastics. This work practice does **not** apply to asphalt coated asbestos felting or built-up roofing.

1. Asbestos Work Request from APM	**Required**
2. Class IV Asbestos Awareness Training (2 hours)	**Required**
3. Engineering Controls	Not Required
4. Air Monitoring	Not Required
5. Certified Asbestos Supervisor	Not Required
8. Personal Protective Equipment	▪ Safety Glasses ▪ Foot Protection ▪ Fall Protection as applicable
9. Debris not regulated asbestos waste must be labelled as non-friable asbestos-containing and may be disposed of as general construction debris.	

Example

- Asphaltic roofing mastic used as penetration patching on vent pipes.

Work Practices

- Follow general roofing removal and patching procedures.
- Any large scale disturbance of ACM roofing materials must be performed by the Term Abatement Contractor.
- Heating roofing tiles to remove nailcrete does not result in disturbance of ACM.

9. Replacing Bulbs in Light Fixture Attached to or In Surface Finished With ACM

This work practice covers procedures for replacing light bulbs in a fixture attached to a surface finished with ACM. Light fixtures attached to or in surfaces finished with ACM can cause damage to ACM if the fixtures are moved during maintenance work.

1. Permit to Work on Asbestos Containing Materials with approval from Shop Shop Supervisor, EH&S and Asbestos Coordinator	Not Required
2. Two (2) Hour Asbestos Awareness Training	**Required**
3. Certified Asbestos Supervisor	Not Required
4. Personal Protective Equipment	▪ Safety Glasses ▪ Foot Protection
5. Housekeeping	▪ Drop Cloths, as needed
6. Isolate work area from non-essential personnel and notify essential personnel of work	

Examples

- Replace bulbs in recessed or pendant mount light fixtures attached to an asbestos-containing decorative texture finish or acoustical plaster ceiling where disturbance of ACM is unlikely.
- Replace bulbs in fixtures mounted on fireproofed surface where disturbance of ACM is unlikely.

Work Practices

- Follow General Asbestos Work Practices in Appendix C.
- Compile any special tools, equipment and materials, including replacement bulbs.
- Place tools, equipment and materials needed in work area.
- Carefully replace light bulbs without jarring fixture. Use drop cloths as needed.
- Perform clean-up and tear-down steps to complete work.

10. Cleaning Rooms with Exposed Surfaces Finished with ACM

This work practice covers the procedures for cleaning a room with exposed surfaces finished with ACM. This room has been predetermined to not be contaminated or has previously been cleaned. **Asbestos awareness training (2 hour) is required.** This is *not* the procedure to use if a fiber release has occurred. See related work practices below.

Examples

- Routine cleaning in room with spray-applied acoustical plaster on walls or ceilings where there is no visible dust or debris.

Work Practices

- Tools, equipment and materials: Standard cleaning equipment and materials
- Clean area using standard cleaning methods. Avoid contact with any ACM materials that could be damaged during cleaning. The APM will select the appropriate work practice and personnel to clean up any debris from ACM.

The following precautions should be observed when working around the ACM:

- Do not bump ACM with vacuum cleaners, broom handles, mop handles or similar objects. Do not exhaust vacuum cleaners toward ACM.
- Do not brush ACM surfaces with a broom or similar objects to remove cobwebs or other items attached to ACM.

11. Painting Surfacing ACM

This work practice describes the work required to paint small amounts of surfacing ACM, such as acoustical plaster or a decorative texture finish**. This work requires asbestos awareness training (2 hour).** Paint coats should be as thin as possible to prevent delamination of surfacing that may be caused by painting. This work may need to be treated as abatement work depending upon the type and condition of the surfacing.

Depending upon the type, condition and friability of the ACM, this work may need to be treated as an abatement activity instead of O & M work. If there is **any** observed damaged, contact the Asbestos Coordinator to schedule the work to be performed by the Asbestos Abatement Term Contractor.

Examples

- Repaint previously painted asbestos-containing acoustical plaster in good condition. No preparation of the surface is required.

Work Practices

- Painting of previously unpainted ACM is prohibited by Maintenance staff and must be performed by Asbestos Abatement Term Contractor.
- Perform work in accordance with General Asbestos Work Procedures in Appendix C.
- Compile tools, equipment and materials, including paint, low pressure airless sprayer, and other painting equipment.
- Prepare work area with drop cloth.
- Place tools, equipment and materials needed on drop cloth.
- Paint ceiling using sprayer.
- When painting is completed, clean up any loose debris using wet wiping and/or HEPA vacuuming, and roll up drop cloth.
- Perform clean-up and tear-down steps to complete work.

12. Elevator Brake Shoe Replacement

This work practice covers procedures for replacing elevator brake shoes.

1. Permit to Work on Asbestos Containing Materials with approval from Shop Shop Supervisor, EH&S and Asbestos Coordinator	Not Required
2. Two (2) Hour Asbestos Awareness Training	**Required**
3. Certified Asbestos	Not Required
4. Personal Protective Equipment	▪ Safety Glasses ▪ Foot Protection
5. Housekeeping	▪ Drop Cloths, as needed

Work Practices

As the removal of these brake shoes is performed without any exposure to the ACM, no special work practices are needed.

NOTE: STOP WORK AND CONTACT ASBESTOS COORDINATOR IF SUSPECT ACM IS ENCOUNTERED

13. Procedures NOT Conducted by Maintenance and Alterations Staff

Due to the expense involved in maintaining and supplying a group of Facilities Services Employees authorized to perform work on friable asbestos-containing materials, this work is contracted out. In addition, some work on non-friable materials is contracted out for if the procedures might disturb the matrix holding the asbestos.

Examples of such procedures include:

Abatement or repair of friable thermal system insulation
Asbestos gasket removal
Asbestos valve packing removal
Asbestos glazing/caulking* compound removal
Asbestos floor tile and cove base removal
Asbestos duct flex connector removal
Penetrating asbestos floor tiles during wall construction

*This does not include roofing caulking.

Appendix E

Forms

Abatement Work Request for Lead & Asbestos
Consultant Work Request for Lead & Asbestos