

ASBESTOS IN CONSTRUCTION AT ILLINOIS STATE UNIVERSITY

1.0 INTRODUCTION

An estimated 1.3 million employees in construction and general industry face significant asbestos exposure on the job. Heaviest exposures occur in the construction industry, particularly during the removal of asbestos during renovation or demolition. Employees are also likely to be exposed during the manufacture of asbestos products (such as textiles, friction products, insulation, and other building materials) and during automotive brake and clutch repair work. Asbestos is well recognized as a health hazard and is highly regulated.

2.0 SCOPE

These regulations apply to asbestos exposure in the following areas:

- Demolition or recovery of structures where asbestos is present.
- Removal or encapsulation of materials containing asbestos.
- Construction, alteration, repair, maintenance, or renovation of structures that contain asbestos.
- Installation of products containing asbestos.
- Asbestos spill/emergency cleanup.
- Transportation, disposal, and storage of asbestos at the site where construction activities are performed.
- Housekeeping activities involving asbestos at the site where construction activities are performed.

3.0 DEFINITIONS

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

Amended water- water to which a 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.

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

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

Class I asbestos work- activities involving the removal of thermal system insulation (TSI) and surfacing ACM and PACM. These types of activities will not be conducted by university employees.

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

Class IV asbestos work- 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- an uncontaminated room having facilities for the storage of street clothing and uncontaminated materials and equipment.

Closely resemble- the major workplace conditions which have contributed to the levels of historic asbestos exposure, and are no more protective than conditions of the current workplace.

Competent person- one who has received specialized training and is capable of identifying asbestos hazards in the workplace and selecting the appropriate control strategy for asbestos exposure and has the authority to take prompt corrective measures to eliminate hazards.

Critical barrier- 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 from migrating to an adjacent area.

Decontamination area- an enclosed area adjacent and connected to the regulated area consisting of an equipment room, shower area, and clean room, that is used for the decontamination of workers, materials, and equipment.

Demolition- the wrecking or taking out of any load-supporting structural member and any related razing, removing, or stripping of asbestos products.

Disturbance- activities that disrupt, crumble, or generate visible debris from ACM or PACM. Disturbance includes cutting away small amounts of ACM and PACM that can be contained in one standard sized glove bag or waste bag in order to access a building component.

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

Equipment room (change room)- 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- a particulate form of asbestos, five micrometers or longer, with a length-to-diameter ratio of at least three to one.

Glovebag- 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 material and tools may be handled.

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

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

Intact- ACM that has not been crumbled, pulverized, or otherwise deteriorated.

Modification- a changed or altered procedure, material or component of a system, which replaces a procedure, material or component of a required system. Omitting a procedure or component, or reducing or diminishing the strength of a material or component of the system is not a modification.

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

PACM (presumed asbestos containing material)- thermal system insulation and surfacing material found in buildings constructed before 1980.

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

Regulated area- an area established by the employer to mark areas where Class I, II, and III asbestos work is conducted, and any adjoining area where debris and waste may accumulate; and a work area where airborne levels of asbestos may exceed the permissible exposure limit.

Removal- all operations where ACM and/or PACM is taken out or stripped from structures or substrates, including demolition operations.

Renovation- the modifying of any existing structure or portion.

Repair- overhauling, rebuilding, reconstructing, or reconditioning of structures or substrates, including encapsulation or other repair of ACM or PACM attached to structures or substrates.

Surfacing material- material that is sprayed, troweled-on or applied to surfaces (such as acoustical plaster on ceilings and fireproofing materials on structural members).

Surfacing ACM- surfacing material which contains more than 1% asbestos.

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

4.0 PERMISSIBLE EXPOSURE LIMITS (PELS)

Time-weighted average limit (TWA)

1. Employees will not be exposed to an airborne concentration of asbestos in excess of 0.1 fiber per cubic centimeter of air as an eight (8) hour time-weighted average (TWA).

Excursion limit

1. Employees will not be exposed to an airborne concentration of asbestos in excess of 1.0 fiber per cubic centimeter of air as averaged over a sampling period of thirty (30) minutes.

5.0 MULTI-EMPLOYER WORKSITES

1. An employer performing work requiring the establishment of a regulated area shall inform other employers on the site of the nature of the work with asbestos and/or PACM, of the requirements pertaining to regulated areas, and measures taken to ensure that employees of the other employers are not exposed to asbestos.
2. Asbestos hazards shall be abated by the contractor who created the source of asbestos contamination.
3. All employers shall comply with applicable protective provisions to protect their employees. For example, if employees working immediately adjacent to a Class I asbestos job are exposed to asbestos due to inadequate containment, their employer shall either remove them from the area until the breach is repaired; or perform an initial exposure assessment.
4. Employers of employees working adjacent to regulated areas shall check daily to determine the integrity of the enclosure and/or the effectiveness of the control method used by the asbestos contractor to assure that asbestos fibers do not migrate to adjacent areas.
5. All general contractors on a construction project shall exercise general supervisory authority over the work covered by this standard, even if the general contractor is not qualified to serve as the asbestos "competent person." As supervisor of the entire project, the general contractor shall determine if the asbestos contractor is in compliance with this standard.

6.0 REGULATED AREAS

1. All Class I, II and III asbestos work will be conducted within regulated areas. Class IV operations will be conducted in a regulated area if airborne concentrations of asbestos may exceed a PEL.
2. The regulated area will be demarcated in any manner that minimizes the number of persons within the area and protects persons outside the area from exposure to airborne asbestos. If critical barriers or negative pressure enclosures are used, they may demarcate the regulated area. Appropriate signage will be displayed.
3. Access to regulated areas will be limited to authorized persons.
4. All persons entering a regulated area where they are required to wear respirators will be supplied with an appropriate respirator.

5. Employees will not eat, drink, smoke, chew tobacco or gum, or apply cosmetics in the regulated area.

6. Asbestos work performed within regulated areas will be supervised by a competent person.

7.0 EXPOSURE ASSESSMENTS AND MONITORING

General monitoring

1. Where exposure monitoring is required, determinations of exposure will be made from breathing zone air samples that are representative of the 8-hour TWA and 30-minute short-term exposures of each employee.

2. Representative 8-hour TWA exposures will be determined on the basis of one or more samples representing full-shift exposure for employees in each work area. Representative 30-minute short-term exposures will be determined on the basis of one or more samples representing 30-minute exposures associated with operations that are most likely to produce exposures above the excursion limit for employees in each work area.

Initial exposure assessment

1. A "competent person" will conduct an exposure assessment immediately before or at the initiation of an operation that may expose a worker to asbestos to determine expected exposures. The assessment must be completed in time to comply with requirements which are triggered by exposure data or the lack of a "negative exposure assessment," and to provide information to assure that all control systems are appropriate for that operation and will work properly.

2. Unless a negative exposure assessment has been made, the initial exposure assessment will, if feasible, be based on employee exposure monitoring. The assessment will take into consideration the monitoring results and all information which indicate employee exposure to asbestos, including any previous monitoring which indicate the levels of asbestos likely to be encountered on the job.

Negative exposure assessment

1. For any one specific asbestos job, employee exposures may be shown to be below the PELs by data that conforms to the following criteria:

- Objective data demonstrating that the material cannot release airborne fibers in concentrations exceeding the PELs under work conditions having the greatest potential for releasing asbestos.

- Where exposure monitoring of a prior asbestos job was performed within 12 months, monitoring was performed in compliance with the asbestos standard; and the data were obtained under conditions that "closely resemble" those used in the current operations, the operations were conducted by employees whose training and experience are similar to that of current employees, and these data show that under the current conditions it is unlikely that the PEL will be exceeded.
- The results of initial exposure monitoring of the current job made from breathing zone air samples that are representative of the 8-hour TWA and 30-minute short-term exposures of each employee covering operations which are most likely to result in exposures over the PELs.

Periodic monitoring

1. Daily monitoring will be conducted that is representative of the exposure of each employee performing Class I or II work unless a negative exposure assessment for the operation has been made.
2. For Class III and IV operations periodic monitoring will be conducted of all work where exposures are expected to exceed a PEL, at intervals sufficient to document the validity of the exposure prediction. When all employees required to be monitored daily are equipped with supplied-air respirators, or other positive pressure mode respirator, daily monitoring is not necessary.
3. Exposure monitoring will be performed whenever there has been a change in personnel or work practices that may result in additional exposures above the PELs. Such additional monitoring is required regardless of whether a "negative exposure assessment" was previously produced for a specific job.

Termination of monitoring

1. If the periodic monitoring reveals that employee exposures are below the permissible exposure limit and excursion limit, monitoring may be discontinued for those employees whose exposures are represented by the monitoring.

Employee notification of monitoring results

1. Affected employees will be notified of monitoring results as soon as possible following receipt of monitoring results.
2. Affected employees will be notified of the results of monitoring in writing either individually or by posting at a centrally located place.

Observation of monitoring

1. Affected employees and their designated representatives will be provided with an opportunity to observe any monitoring of employee exposure to asbestos.

2. When observation of the monitoring of employee exposure to asbestos requires entry into an area where the use of protective clothing or equipment is required, the observer shall use such clothing and equipment.

8.0 METHODS OF COMPLIANCE

General Engineering controls and work practices

1. The following engineering controls and work practices will be used in all operations regardless of the levels of exposure:

- Vacuum cleaners equipped with HEPA filters to collect all debris and dust containing ACM and PACM, except for roofing material.
- Wet methods to control employee exposures during asbestos handling, removal, cutting, and cleanup, except where the use of wet methods are not feasible or will create safety hazards.
- Prompt clean-up and disposal of wastes and debris contaminated with asbestos in leak-tight containers, except in roofing operations.

2. In addition to the above measures, the following control methods will be used to achieve compliance with the PELs:

- Local exhaust ventilation equipped with HEPA filter dust collection systems.
- Enclosure or isolation of processes producing asbestos dust.
- Ventilation of the regulated area to move contaminated air away from the breathing zone of employees and toward a filtration or collection device equipped with a HEPA filter.

3. When engineering and work practice controls described above are not sufficient to reduce employee exposure below the PELs, they shall be used to reduce exposures to the lowest levels attainable and shall be supplemented by the use of respiratory protection.

4. The following work practices and engineering controls will not be used for work related to asbestos, regardless of levels of exposure or the results of initial exposure assessments:

- High-speed abrasive disc saws that are not equipped with point of cut ventilator or enclosures with HEPA filtered exhaust air.
- Compressed air used to remove asbestos, unless the compressed air is used in conjunction with an enclosed ventilation system designed to capture the dust created by the compressed air.
- Dry sweeping, shoveling or other dry clean-up of dust and debris containing ACM and PACM.
- Employee rotation as a means of reducing employee exposure to asbestos.

Work practices and engineering controls for class I work

1. Work practices and engineering controls for class I work will be done in accordance with OSHA's Construction Standard 1926.1101(g)(4)-(6). University employees will not perform Class I operations.

Work practices and engineering controls for class II work

1. All Class II work will be supervised by a competent person.

2. For all indoor Class II jobs, where a negative exposure assessment has not been produced, or if changed conditions indicate there may be exposure above the PEL or where ACM is not removed in a substantially intact state, one of the following methods will be used to ensure that airborne asbestos does not migrate from the regulated area:

- Critical barriers will be placed over all openings to the regulated area.
- Another barrier or isolation method will be used which prevents the migration of airborne asbestos from the regulated area, as verified by perimeter area monitoring or clearance monitoring.

3. Impermeable dropcloths will be placed on surfaces beneath all removal activity.

Controls for specific Class II operations

Floor tiles

1. For removing vinyl and asphalt flooring materials which contain ACM or, in buildings constructed before 1980, the absence of ACM has not been verified, employees will comply with the following work practices:

- Flooring or its backing will not be sanded.
- Vacuums equipped with HEPA filter, disposable dust bag, and metal floor tool (no brush) will be used to clean floors.
- Resilient sheeting will be removed by cutting, with wetting of the snip point and wetting during delamination. Rip-up of resilient sheet floor material is prohibited.
- All scraping of residual adhesive and/or backing will be performed using wet methods.
- Dry sweeping is prohibited.
- Mechanical chipping is prohibited unless performed in a negative pressure enclosure.
- Tiles will be removed intact, unless intact removal is not possible. Wetting may be omitted if tiles can be removed intact when heated.

2. Resilient flooring material including associated mastic and backing will be assumed to contain asbestos unless it is determined to be asbestos-free using recognized analytical techniques.

Roofing Material

1. To remove roofing material which contains ACM the following work practices will be followed:

- Roofing material will be removed in an intact state if feasible. Wet methods will be used to remove roofing materials that are not intact unless wet methods are not feasible or will create safety hazards.
- Cutting machines will be continuously misted during use, unless a competent person determines that misting substantially decreases worker safety.
- When using a power roof cutter to remove asbestos-containing roofing felts and an aggregate surface, dust will be collected by a HEPA dust collector. When removing asbestos-containing roofing felts and a smooth surface using a power roof cutter, the dust will be collected by a HEPA dust collector, or by gently sweeping and then completely wiping up the wet dust.
- Asbestos-containing material that has been removed from a roof will not be dropped to the ground. It will be carried or passed to the ground by hand, or lowered to the ground via covered, dust-tight chute, crane or hoist.
- Any ACM that is not intact will be lowered to the ground as soon as practicable, but no later than the end of the work shift. While the material remains on the roof it will be kept wet, placed in a waste bag, or wrapped in plastic sheeting.
- Intact ACM will be lowered to the ground as soon as is practicable, but no later than the end of the work shift. Upon being lowered, unwrapped material will be transferred to a closed receptacle in a manner that minimizes dust.
- Roof level ventilation air intakes will be isolated or the ventilation system shut down.

2. Removal or repair of sections of intact roofing less than 25 square feet does not require wet methods or HEPA vacuuming as long as manual methods keep the material intact and no visible dust is created. In determining if a job involves less than 25 square feet, all removal and repair work performed on the same roof on the same day shall be included.

Siding, transite panel, shingles (other than roofs)

1. When removing cementitious asbestos-containing siding and shingles or transite panels containing ACM on building exteriors (other than roofs) the following work practices will be followed:

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

Gaskets

1. When removing gaskets containing ACM, the following work practices will be followed:

- If a gasket is visibly deteriorated and unlikely to be removed intact, removal will be undertaken within a glovebag.
- The gasket will be immediately placed in a disposal container.
- Any scraping to remove residue must be performed wet.

Other Materials

1. When performing any other Class II removal of ACM for which specific controls have not been listed the following work practices will be complied with:

- The material will be thoroughly wetted with amended water prior to and during its removal.
- The material will be removed in an intact state if possible
- Cutting, abrading or breaking the material is prohibited unless methods less likely to result in asbestos fiber release are not feasible.
- Asbestos-containing material removed, will be immediately bagged or wrapped, or kept wetted until transferred to a closed receptacle, no later than the end of the work shift.

Alternative Work Practices and Controls

1. Instead of the work practices and controls listed above, different or modified engineering and work practice controls may be used if the following provision is complied with:

a. A competent person shall evaluate the work area, the projected work practices and the engineering controls, and shall certify in writing, that the different or modified controls are adequate to reduce employee exposure to below the PELs under all expected conditions and the method meets the requirements of this standard. The evaluation shall be based on data representing employee exposure during the use of the method under conditions which closely resemble those which will be used for the current job, and by employees whose training and experience are equivalent to employees who will perform the job.

Work practices and engineering controls for Class III asbestos work

1. Class III asbestos work will be conducted using engineering and work practice controls which minimize exposure to employees.

2. The work will be performed using wet methods.

3. To the extent feasible, the work will be performed using local exhaust ventilation.
4. Where the disturbance involves drilling, cutting, abrading, sanding, chipping, breaking, or sawing of thermal system insulation or surfacing material, impermeable drop cloths will be used, and the operation isolated using mini-enclosures, glove bag systems, or another isolation method.
5. If a "negative exposure assessment" has not been produced, or if monitoring shows the PEL has been exceeded, the area will be contained using impermeable dropcloths and plastic barriers or their equivalent, or the operation will be isolated using an approved control system.
6. Employees performing Class III jobs, which involve the disturbance of thermal system insulation or surfacing material, or where a "negative exposure assessment" has not been produced or where monitoring results show a PEL has been exceeded, will wear respirators.

Class IV asbestos work

1. Employees will promptly clean up of debris containing ACM or PACM using wet methods and HEPA vacuums.
2. Employees who clean up waste and debris in areas where friable thermal system insulation or surfacing material is accessible, will assume that such waste and debris contain asbestos.

Alternative methods of compliance for installation, removal, repair, and maintenance of certain roofing and pipeline coating materials

This section applies when installing, removing, repairing, or maintaining intact pipeline asphaltic wrap, or roof cements, mastics, coatings, or flashings which contain asbestos fibers encapsulated or coated by bituminous or resinous compounds.

1. Before work begins and as needed during the job, a competent person shall conduct an inspection of the worksite and determine that the roofing material is intact and will likely remain intact.
2. The material will not be sanded, abraded, or ground. Manual methods which keep the material intact will be used.
3. Material that has been removed from a roof will not be dropped to the ground. It will be carried or passed to the ground by hand, or lowered via covered, dust-tight chute, crane or hoist. All such material will be removed from the roof as soon as practicable, but no later than the end of the work shift.

4. If roofing products which contain asbestos are installed on non-residential roofs the Safety Office must be notified of the presence and location of such materials no later than the end of the job.

5. All removal or disturbance of pipeline asphaltic wrap will be performed using wet methods.

9.0 RESPIRATORY PROTECTION

General

Respirators will be used in the following circumstances:

1. During all Class I asbestos jobs.
2. During all Class II work where ACM is not removed in a substantially intact state.
3. During all Class II and III work which is not performed using wet methods, provided, that respirators are not required during removal of ACM from sloped roofs when a negative exposure assessment has been made and the ACM is removed in an intact state.
4. During all Class II and III asbestos jobs where a "negative exposure assessment" has not been produced.
5. During all Class III jobs where TSI or surfacing ACM or PACM is being disturbed.
6. During all Class IV work performed within regulated areas where employees performing other work are required to wear respirators.
7. During all work covered by this section where employees are exposed above the PELs.
8. In emergencies.

Respirator selection

1. Where respirators are used, the Safety Office will provide the appropriate respirator (Table 1) and will ensure that the employee uses the respirator.
2. Respirators will be approved by the Mine Safety and Health Administration (MSHA) and the National Institute for Occupational Safety and Health (NIOSH).
3. A powered, air-purifying respirator will be supplied to employees in lieu of a negative-pressure respirator whenever:

- An employee chooses to use this type of respirator.
- This respirator will provide adequate protection to the employee.

4. Employees will be notified that they may request a powered, air-purifying respirator in lieu of a negative pressure respirator.

Table 1. -- Respiratory Protection for Asbestos Fibers

<i>Airborne concentration of asbestos</i>	<i>Minimum required respirator</i>
Less than 1 f/cc (10 X PEL)	Half-mask air purifying with HEPA filters
Less than 5 f/cc (50 X PEL)	Full facepiece with HEPA filters
Less than 10 f/cc (100 X PEL)	Powered air-purifying respirator with HEPA filters
Less than 100 f/cc (1,000 X PEL)	Full facepiece supplied air respirator operated in pressure demand mode
Grtr than 100 f/cc (1,000 X PEL) or unknown concentration	Full facepiece supplied air respirator operated in pressure demand mode, equipped with an auxiliary positive pressure SCBA

Respirator program

1. Where respiratory protection is used, a respirator program will be developed in accordance with the OSHA Regulations for General Industry.
2. Employees who use a filter respirator will change the filter whenever an increase in breathing resistance is detected. An adequate supply of filters will be maintained in the Safety Office.
3. Employees who wear respirators will be permitted to wash their faces and respirator facepieces whenever necessary to prevent skin irritation associated with respirator use.
4. No employee shall use a respirator if a physician determines that the safety or health of the employee will be impaired by the use of a respirator. The employee will be assigned to another job or given the opportunity to transfer to a different position, in the same geographical area, and with the same seniority, status, and rate of pay and other job benefits he or she had just prior to such transfer, if such a position is available.

Respirator fit testing

1. The respirator issued to the employee will exhibit the least possible facepiece leakage and fit properly.
2. A quantitative or qualitative fit test will be preformed by the Safety Office at the time of initial fitting and at least every six months thereafter for each employee wearing a negative-pressure respirator. The qualitative fit tests may be used only for testing the fit of half-mask respirators or of full-facepiece respirators where they are worn at levels at which half-facepiece respirators are permitted.

10.0 PROTECTIVE CLOTHING

1. Protective clothing, such as coveralls or similar whole-body clothing, head coverings, gloves, and foot coverings will be worn by employees exposed to airborne concentrations of asbestos that exceed the PELs, or for which a required negative exposure assessment is not produced.
2. Protective clothing will be worn during Class I operations which involves the removal of over 25 linear or 10 square feet of TSI or surfacing ACM or PACM.
3. Contaminated clothing will be laundered so as to prevent the release of airborne asbestos in excess of the PELs. Any person who gives contaminated clothing to another person for laundering will inform that person of this requirement.
4. Contaminated clothing will be transported in sealed, properly labeled impermeable bags.
5. The competent person will examine worksuits worn by employees at least once per workshift for rips or tears. Rips or tears will be immediately mended, or the worksuit immediately replaced.

11.0 HYGIENE FACILITIES AND PRACTICES FOR EMPLOYEES

Requirements for Class I operations

1. Class I operations involving over 25 linear or 10 square feet of TSI or surfacing ACM or PACM will be performed in accordance with 1926.1101(j)(1) of the OSHA Standard. University employee will not perform class I operations.

Requirements for Class I work involving less than 25 linear or 10 square feet of TSI or surfacing ACM or PACM, and for Class II and III operations where exposures exceed a PEL or where no negative exposure assessment has been done.

1. An equipment room or area that is adjacent to the regulated area which is covered by an impermeable drop cloth on the floor will be established for the decontamination of employees and their equipment
2. The area must be of sufficient size as to accommodate cleaning of equipment and removing personal protective equipment without spreading contamination beyond the area (as determined by visible accumulations).
3. Work clothing must be cleaned with a HEPA vacuum before removal.
4. All equipment and surfaces of containers filled with ACM must be cleaned prior to removal from the equipment room or area.
5. Employees will enter and exit the regulated area through the equipment room or area.

Requirements for Class IV work

1. Employees performing Class IV work within a regulated area will comply with the hygiene practice required of employees performing work with a higher classification. For work in unregulated areas, decontamination facilities shall be provided to employees cleaning up debris which is TSI or surfacing ACM or PACM.

Smoking in work areas

1. Employees will not smoke in work areas where they are occupationally exposed to asbestos.

12.0 COMMUNICATION OF HAZARDS

Installed asbestos containing building material

1. The university will determine if TSI and sprayed or troweled on surfacing materials in buildings contains asbestos. Asphalt and vinyl flooring material installed before 1980 must be assumed to contain asbestos unless known not to contain asbestos. When communicating information to employees PACM shall be identified as ACM.

Duties of employers

1. Before work is begun, the presence, location, and quantity of ACM and/or PACM at the work site will be determined by the Safety Office.
2. The following persons will be notified of the presence, location and quantity of ACM or PACM, at the work site. Notification will be in writing, or by personal communication:

- Prospective employers applying or bidding for work whose employees are expected to work in or adjacent to these areas.
- Employees of the university who will work in or adjacent to areas containing asbestos.
- On multi-employer worksites, all employers who perform work within or adjacent to areas containing such materials.
- Tenants who will occupy areas containing such material.

3. Within 10 days of the completion of work, contractors shall inform the university of the current location and quantity of PACM and/or ACM remaining in the area and final monitoring results, if any.

4. All employers who discover ACM and/or PACM on a worksite must convey information concerning the presence, location and quantity of the newly discovered ACM and/or PACM to the Safety Office within 24 hours.

Criteria to negate the designation of installed material as PACM

1. At any time, the university may demonstrate that PACM does not contain asbestos. The university is not required to communicate this information to employees. However the information supporting the determination that PACM does not contain asbestos will be retained in the Safety Office.

2. The following may be used to demonstrate that PACM does not contain more than 1 percent asbestos:

- Conducting an inspection that meets the requirements of AHERA (40 CFR Part 763, Subpart E) which demonstrates that the material is not ACM.
- Performing tests that show ACM is not present in the material. These tests shall include analysis of bulk samples collected in the manner described in 40 CFR 763.86. The tests shall be conducted by an accredited inspector or a CIH. Analysis of samples shall be performed by accredited laboratories.

3. The university may demonstrate that flooring material including mastic and backing does not contain asbestos, by a determination of an industrial hygienist based upon recognized analytical techniques showing that the material is not ACM.

13.0 SIGNS

1. At the entrance to mechanical rooms that contain ACM and/or PACM, signs will be posted that identify the material present, its location, and appropriate work practices to ensure that ACM and/or PACM will not be disturbed.

2. Warning signs that demarcate a regulated area will be provided and displayed at each location where a regulated area is required. These signs shall bear the following information:

DANGER
ASBESTOS
CANCER AND LUNG DISEASE HAZARD
AUTHORIZED PERSONNEL ONLY

3. Where the use of respirators and protective clothing is required in the regulated area, warning signs shall include the following:

RESPIRATORS AND PROTECTION CLOTHING ARE REQUIRED IN THIS AREA

14.0 LABELS

1. Labels shall be fastened to all products containing asbestos and to all containers containing asbestos, including waste containers. Where feasible, installed asbestos products shall contain a visible label.

2. Labels shall be printed in large, bold letters on a contrasting background and contain the following information:

DANGER
CONTAINS ASBESTOS FIBERS
AVOID CREATING DUST
CANCER AND LUNG DISEASE HAZARD
DO NOT BREATHE FIBERS

3. The requirement to label products do not apply where:

- Asbestos fibers have been modified by a bonding agent, coating, binder, or other material that prevents release of airborne concentrations of asbestos fibers in excess of the PELs.
- Asbestos is present in a product in concentrations less than 1.0 percent.

4. When previously installed PACM or ACM is identified; labels or signs must be affixed or posted so that employees will be notified of what materials contain PACM or ACM. These labels will be posted in areas where they will clearly be noticed by employees who are likely to be exposed, such as at the entrance to mechanical rooms.

15.0 EMPLOYEE TRAINING

1. A training program will be instituted for all employees who are likely to be exposed in excess of a PEL and for all asbestos workers.
2. Training will be provided prior to the time of initial assignment and at least annually thereafter.

Class I and II Operations

1. Training for Class I and II operations that require the use of critical barriers (or equivalent methods) and/or negative pressure enclosures will be equivalent to the EPA Model Accreditation Plan (MAP) asbestos abatement workers training (40 CFR Part 763, subpart E, appendix C).
2. For Class II work with asbestos containing roofing materials, flooring materials, siding materials, ceiling tiles, transite panels, and other materials training will include specific work practices and controls. The course will include "hands-on" training and take at least eight hours.

Class III Operations

1. Training for Class III employees will be consistent with EPA requirements for training of maintenance and custodial staff described in 40 CFR 763.92(a)(2). The course shall include "hands-on" training and take at least 16 hours.

Class IV Operations

1. Training for employees performing Class IV operations will be consistent with EPA requirements for training of maintenance and custodial staff contained in 40 CFR 763.92(a)(1). The course shall include information concerning the locations of thermal system insulation, surfacing ACM/PACM, asbestos containing flooring material, flooring material where the absence of asbestos has not yet been certified; and instruction in recognition of damage, deterioration, and delamination of asbestos containing building materials. The course will take at least two hours.

Training program

1. The following general information must be included in the training program:
 - Methods of recognizing asbestos, including the requirement to presume that certain building materials contain asbestos.
 - The health effects associated with asbestos exposure.
 - The relationship between smoking and asbestos in producing lung cancer.
 - The nature of operations that could result in exposure to asbestos, the importance of controls to minimize exposure including engineering controls, work practices,

- respirators, housekeeping procedures, hygiene facilities, protective clothing, decontamination procedures, emergency procedures, and waste disposal procedures..
- The purpose, proper use, fitting instructions, and limitations of respirators.
 - Medical surveillance program requirements.
 - The content of this program.
 - The names, addresses and phone numbers of public health organizations which provide information, and/or conduct programs concerning smoking cessation.
 - The requirements for posting signs and affixing labels.

2. Written materials relating to the employee training program, including a copy of this program will be made readily available to affected employees.

16.0 HOUSEKEEPING

1. Where vacuuming methods are selected, HEPA filtered vacuuming equipment must be used. The equipment will be used and emptied in a manner that minimizes the reentry of asbestos into the workplace.

2. Asbestos waste will be collected and disposed of in sealed, labeled, impermeable bags or other closed, labeled, impermeable containers.

3. Care of asbestos-containing flooring material:

- Sanding of flooring material is prohibited.
- Stripping of finishes will be conducted using wet methods and low abrasion pads at speeds lower than 300.
- Burnishing or dry buffing may be performed only on flooring which has sufficient finish so that the pad cannot contact the flooring material.

4. Waste, debris and accompanying dust in an area containing accessible thermal system insulation or surfacing ACM/PACM or visibly deteriorated ACM:

- Will not be dusted or swept dry, or vacuumed without using a HEPA filter.
- Will be promptly cleaned up and disposed of in leak tight containers.

17.0 MEDICAL SURVEILLANCE

Employees covered

1. A medical surveillance program will be instituted for all employees who are engaged in Class I, II or III work for a combined total of 30 or more days per year, or are exposed

above a PEL. A day will not be counted if work is done on intact material for less than one hour and a worker adheres fully to the required work practices.

2. For employees required to wear a negative pressure respirator, the university will ensure employees are physically able to perform the work. This determination will be made under the supervision of a physician.

Examination

1. All medical examinations and procedures will be performed by or under the supervision of a licensed physician. Examinations will be provided at no cost to employees and at a reasonable time and place.

2. Persons other than licensed physicians who administer a pulmonary function test shall complete a training course in spirometry sponsored by an appropriate academic or professional institution.

3. Medical examinations and consultations will be made available employees on the following schedules:

- Prior to assignment in an area where negative-pressure respirators are worn.
- When the employee is assigned to an area where exposure to asbestos may be above the PEL for 30 or more days per year, or engage in Class II, or III work for a combined total of 30 or more days per year, a medical examination must be given within 10 working days following the thirtieth day of exposure and at least annually thereafter.
- If a physician determines that any examination should be provided more frequently than specified, the examination will be provided at the frequencies specified by the physician.
- No medical examination is required if adequate records show that the employee has been examined within the past 1-year period.

4. Medical examinations will include:

- A medical and work history with special emphasis directed to the pulmonary, cardiovascular, and gastrointestinal systems.
- On initial examination and for the annual examination, the standardized questionnaire contained in Appendix D of the OSHA regulations (1926.1101).
- A physical examination directed to the pulmonary and gastrointestinal systems, including a chest x-ray if requested by the physician, and pulmonary function tests.
- Any other examinations or tests deemed necessary by the physician.

5. The following information will be provided to the examining physician:

- A copy of the OSHA regulations (1926. 1101)

- A description of the employee's duties as they relate to asbestos exposure.
- The employee's representative exposure level.
- A description of any personal protective and respiratory equipment used.
- Information from previous medical examinations that is not otherwise available to the examining physician.

6. A written opinion will be obtained from the examining physician. This written opinion will contain the results of the medical examination and include:

- The physician's opinion as to whether the employee has any medical conditions that would place the employee at an increased risk of health impairment from exposure to asbestos.
- Any recommended limitations on the use of personal protective equipment such as respirators.
- A statement that the employee has been informed by the physician of the results of the medical examination and of any medical conditions that may result from asbestos exposure.
- A statement that the employee has been informed by the physician of the increased risk of lung cancer attributable to the combined effect of smoking and asbestos exposure.

7. The physician will be instructed not to reveal specific findings or diagnoses unrelated to occupational exposure to asbestos.

8. A copy of the physician's written opinion will be given to the affected employee within 30 days from its receipt.

18.0 RECORDKEEPING

Objective data

1. Where objective data has been used to demonstrate that products made from or containing asbestos are not capable of releasing fibers in concentrations above the PELs under the conditions of use, a record of this data will be maintained in the Safety Office.

2. The record will include at least the following information:

- The product qualifying for exemption.
- The source of the objective data.
- The testing protocol, results of testing, and/or analysis of the material for the release of asbestos.
- A description of the operation exempted and how the data support the exemption.
- Other data relevant to the operations, materials, processing, or employee exposures covered by the exemption.

3. Where the university has received information concerning the identification, location and quantity of ACM and PACM, written records will be maintained for the duration of ownership and shall be transferred to successive owners.

Exposure measurements

1. A record will be maintained by the Safety Office of all measurements taken to monitor employee exposure to asbestos. This record will include at least the following information:

- The date of measurement.
- The operation involving exposure to asbestos.
- Sampling and analytical methods used and evidence of their accuracy.
- Number, duration, and results of samples taken.
- Type of protective devices worn, if any.
- Name, social security number, and exposure of the employees.

2. Records will be maintained for at least thirty years.

Medical surveillance

1. A record will be maintained in the Safety Office for each employee. The record will include at least the following information:

- The name and social security number of the employee.
- A copy of the employee's medical examination results, including the medical history, questionnaire responses, results of any tests, and physician's recommendations.
- Physician's written opinions.
- Any employee medical complaints related to exposure to asbestos.
- A copy of the information provided to the physician as required by this section.

2. This record will be maintained for the duration of employment plus thirty years.

Training records

1. Employee training records will be maintained by the Safety Office for one year beyond the last date of employment.

Availability

1. Upon written request, all records required by this section will be made available to the Assistant Secretary and the Director for examination and copying.

2. Upon request, exposure records will be made available for examination and copying to affected employees, former employees, designated representatives, and the Assistant Secretary.

3. Upon request, medical records will be made available for examination and copying to the subject employee, anyone having the specific written consent of the subject employee, and the Assistant Secretary.

19.0 COMPETENT PERSON

Duties

1. On all construction worksites covered by this program, a competent person will be designated that has the qualifications and authority to ensure worker safety and health.

2. The competent person will conduct frequent and regular inspections of the job site, materials, and equipment.

3. For Class I jobs, on-site inspections will be made at least once during each work shift, and upon employee request.

4. For Class II, III, and IV jobs, on-site inspections will be made at intervals sufficient to assess whether conditions have changed, and at any reasonable time at employee request.

5. On all worksites where employees are engaged in Class I or II asbestos work, the competent person will perform or supervise the following duties, as applicable:

- Set up the regulated area, enclosure, or other containment.
- Ensure (by on-site inspection) the integrity of the enclosure or containment.
- Set up procedures to control entry to and exit from the enclosure and/or area.
- Supervise all employee exposure monitoring.
- Ensure that employees working within the enclosure and/or using glove bags wear respirators and protective clothing.
- Ensure through on-site supervision, that employees set up, use and remove engineering controls, and use work practices and personal protective equipment in compliance with all requirements.
- Ensure that employees use the hygiene facilities and observe proper decontamination procedures.
- Ensure that notification requirements are met.

Training for the competent person

1. For Class I and II asbestos work the competent person shall be trained in all aspects of asbestos removal and handling, including: abatement, installation, contents of this

standard; identification of asbestos; and other practices for reducing hazards. Such training shall be obtained in a comprehensive course for supervisors that meets the criteria of EPA's Model Accredited Plan (40 CFR part 763, subpart E, Appendix C) or its equivalent. The course shall be conducted by an EPA-approved or state-approved training provider, certified by EPA or the state.

2. For Class III and IV asbestos work, the competent person shall be trained in aspects of asbestos handling appropriate for the nature of the work, to include procedures for setting up glove bags and mini-enclosures, practices for reducing asbestos exposures, use of wet methods, contents of this standard, and identification of asbestos. Such training shall include successful completion of a course that is consistent with EPA requirements for training of maintenance and custodial staff as set forth at 40 CFR 763.92(a)(2), or its equivalent.