ASBESTOS IN GENERAL INDUSTRY

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 may also be exposed in general industry during the manufacture of asbestos products (such as textiles, friction products, insulation, and other building materials), during automotive brake and clutch repair work, and when conducting housekeeping activities. Asbestos is well recognized as a health hazard and is highly regulated.

2.0 SCOPE

This section applies to occupational exposures to asbestos in general industry. It does not apply to construction work.

3.0 DEFINITIONS

Asbestos- includes chrysotile, amosite, crocidolite, tremolite asbestos, anthophyllite asbestos, actinolite asbestos, and any of these minerals that have been chemically treated and/or altered.

Asbestos containing material (ACM)- any material containing more than 1% asbestos.

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

Building/facility owner- the legal entity, including a lessee, which exercises control over management and record keeping functions relating to a building and/or facility in which activities covered by this program take place.

Employee exposure- that exposure to airborne asbestos that would occur if the employee were not using respiratory protective equipment.
**Fiber**- a particulate form of asbestos 5 micrometers or longer, with a length-to-diameter ratio of at least 3 to 1.

**High-efficiency particulate air (HEPA) filter**- a filter capable of trapping and retaining at least 99.97 percent of 0.3 micrometer diameter particles.

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

**PACM**- presumed asbestos containing material.

**Presumed asbestos containing material**- thermal system insulation and surfacing material found in buildings constructed before 1980.

**Regulated area**- an area where airborne concentrations of asbestos may exceed the permissible exposure limits.

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

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

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

**Thermal System Insulation ACM**- thermal system insulation which contains more than 1 percent asbestos.

### 4.0 PERMISSIBLE EXPOSURE LIMIT (PEL)

1. Employees shall not be exposed to an airborne concentration of asbestos in excess of 0.1 fibers per cubic centimeter of air, measured as an eight-hour time-weighted average.

2. Employees shall not be exposed to an airborne concentration of asbestos in excess of 1.0 fiber per cubic centimeter of air, averaged over a sampling period of 30 minutes.

### 5.0 EXPOSURE MONITORING

1. Initial monitoring will be performed on employees who may be exposed to airborne concentrations exceeding the permissible exposure limits (PEL). Sampling will be conducted at least every six months if exposure above the PEL is still possible.
2. Exposure determinations are made from breathing zone samples that are representative of the 8-hour and 30-minute short term exposures of each employee. Samples will be collected following procedures approved by OSHA.

3. Monitoring is not required if objective data indicates that asbestos cannot be released in airborne concentrations above the PEL.

4. Exposure monitoring will be performed if any change occurs that may result in the employee being exposed above the PEL.

5. Employees will be notified of the monitoring results within 15 working days after receipt of the report.

6. If the PEL has been exceeded, employees will be notified of actions being taken to reduce exposures below the PEL.

7. Affected employees or their designated representatives will be allowed to observe any monitoring of employee exposure to asbestos.

8. Employees exposed to airborne concentrations of fibers above the PEL will be enrolled in a medical surveillance program. The program will be in conformity with section (l) of the Asbestos Standard for General Industry.

6.0 REGULATED AREAS

1. Regulated areas shall be established if airborne concentrations exceed the PEL.

2. Regulated areas will be clearly marked.

3. Access to regulated areas will be limited to authorized persons.

4. Individuals entering regulated areas will use appropriate respiratory protection.

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

7.0 METHODS OF COMPLIANCE

1. When feasible, engineering and work practice controls shall be instituted to reduce employee exposures to below the PEL. If reduction below the PEL is not possible, exposures will be reduced to the lowest levels possible.
2. Respiratory protection will be used to supplement engineering and work practice controls if needed. Powered air purifying respirators will be provided to employees upon request. Respiratory protection shall be in compliance with section (g) of the Asbestos Standard for General Industry.

3. If employees are exposed to asbestos above the PEL or where the possibility of eye irritation exists, appropriate personal protective equipment will be provided. The use of PPE will be in compliance with section (h) of the Asbestos Standard for General Industry.

4. If exposures exceed the PEL, employees will be provided with change rooms, showers, and lunchrooms that are in compliance with Section (i) of the Asbestos Standard for General Industry.

5. All tools that produce or release fibers will be provided with local exhaust ventilation.

6. Local exhaust ventilation and dust collection systems will be designed, constructed, installed, and maintained according to ANSI recommendations.

7. When practical, asbestos will be handled in a wet state.

8. Asbestos cement, mortar, grout or similar materials will be handled wet or enclosed or ventilated to prevent the release of asbestos fibers.

9. Compressed air will not be used to remove asbestos fibers unless a ventilation system effectively captures the dust cloud.

10. Sanding of asbestos containing flooring materials is prohibited.

11. Employee rotation is prohibited as a means of compliance with the PEL.

12. During automotive brake and clutch inspection or repair, engineering controls and work practice controls will be used to reduce employee exposures. A negative pressure enclosure/HEPA vacuum system, low pressure/wet cleaning method, or an equivalent method will be used. All methods will meet the requirements of Appendix F of the OSHA regulations.

13. If less than five pairs of brakes or five clutches are inspected or repaired per week the methods in paragraph D of Appendix F may be used.

14. Employees are prohibited from smoking in areas where they are occupationally exposed to asbestos.

8.0 COMMUNICATION OF HAZARDS TO EMPLOYEES
1. Installed TSI and sprayed on and troweled-on surfacing materials will be treated as ACM in buildings constructed prior to 1980 unless testing demonstrates that the material does not contain asbestos.

2. Asphalt and vinyl flooring material installed prior to 1980 will be assumed to contain asbestos unless testing demonstrates that the material does not contain asbestos.

3. The presence, location, and quantity of ACM and PACM at the work site are determined by the university.

4. The university may demonstrate that PACM does not contain asbestos by having an inspection conducted according to AHERA requirements (40 CFR 763, subpart E). Tests, evaluation, and sample collection will be conducted by an accredited inspector or CIH. Analysis of samples will be performed by laboratories that have demonstrated proficiency by participation in a nationally recognized testing program.

5. Employees, including housekeepers, are informed of the presence and location of ACM and PACM that might be contacted while performing their duties.

6. Records are maintained in Facilities Management and the Safety Office concerning the presence, location, and quantity of ACM and PACM located at the university.

7. The identification of ACM and PACM is made by a CIH or a person with equivalent training.

8. Warning signs shall be displayed at all approaches to regulated areas. The warning signs will state the following:

   DANGER
   
   ASBESTOS

   CANCER AND LUNG DISEASE HAZARD

   AUTHORIZED PERSONNEL ONLY

9. If respirators and protective clothing are required in the regulated area the warning sign will include this information.

10. Signs shall be posted at the entrance to mechanical rooms that contain ACM or PACM to notify employees of the location of these materials and proper work practices to ensure that the asbestos is not disturbed.

11. Warning labels shall be affixed to all waste containing asbestos fibers.
12. Signs will be posted to notify employees who are likely to be exposed, of installed materials that contain ACM or PACM. These signs are posted where employees can clearly notice them and will comply with the Hazard Communication Standard. Signs are not required if it can be demonstrated that during any reasonably foreseeable use airborne concentrations of fibers will not exceed the PEL.

9.0 TRAINING

1. A training program will be established for all employees exposed to airborne concentrations of asbestos above the PEL. Training will be conducted at the time of initial assignment and at least annually thereafter. Training will include:

   - Health effects associated with exposure to asbestos.
   - The hazards of smoking and working with asbestos.
   - The location and quantity of asbestos.
   - Engineering controls and procedures to protect employees.
   - Respirators and PPE.
   - Medical surveillance program.
   - Content of the asbestos standard.
   - Names, addresses, and phone numbers of public health organizations that provide information concerning smoking cessation.
   - The requirements for posting signs and labels.

2. Housekeepers and maintenance personnel who work in areas that contain ACM or PACM will receive an asbestos awareness training course that contains the following material:

   - Health effects of asbestos.
   - Locations of ACM and PACM.
   - Recognition of ACM and PACM damage and deterioration.
   - The requirements of this standard that relate to housekeeping.
   - The proper response for handling a fiber release.
   - Availability of self-help smoking cessation program material.

3. Training for housekeepers and maintenance personnel will be performed annually by the Safety Office.

4. A copy of the Asbestos Standard will be made available to all affected employees at no cost.
10.0 HOUSEKEEPING PROCEDURES

1. All surfaces will be maintained to prevent, as much as practical, the accumulation of waste, debris, and dust containing ACM.

2. All spills of ACM shall be cleaned up as soon as possible by properly trained personnel.

3. Surfaces that are contaminated with asbestos are prohibited from being cleaned up with compressed air.

4. HEPA vacuums will be used for vacuuming debris that contains asbestos. The equipment is used and emptied in a manner that minimizes the reentry of asbestos into the workplace.

5. Shoveling, dry sweeping, and dry clean-up of asbestos is used only when vacuuming and/or wet cleaning are not feasible.

6. Waste contaminated with asbestos shall be disposed of in sealed impermeable bags or other impermeable container.

7. The sanding of floor materials that contain asbestos is prohibited.

8. When stripping finishes, low abrasion pads at speeds less than 300 rpm and wet methods will be used.

9. Burnishing or dry buffing will only be performed on asbestos containing flooring that has a sufficient finish, so that the pad cannot contact the asbestos containing material.

11.0 RECORDKEEPING

1. The Safety Office will maintain a record of all measurements taken to monitor employee exposure to asbestos. These records will be maintained for at least thirty years.

2. When the handling of ACM is exempted from the requirements of this standard a record of the objective data that was relied on in support of the exemption will be maintained in the Safety Office.

3. A record for each employee that is enrolled in a medical surveillance program will be maintained in the Safety Office. These records will be maintained for the duration of employment plus thirty years.

4. All training records will be maintained in the Safety Office for one year beyond the last day of employment of that employee.
5. Exposure and medical records are made available to affected employees and former employees upon request.

12.0 WORK PRACTICES FOR AUTOMOTIVE BRAKE AND CLUTCH REPAIR

The following methods are approved for the inspection or repair of brakes and clutches.

Negative Pressure Enclosure/HEPA Vacuum Method

1. Enclose the brake or clutch operation to prevent the release of fibers into the worker's breathing zone. The enclosure shall allow the worker to clearly see the operation and be provided with impermeable sleeves.

2. Seal the enclosure tightly and inspect for leaks in the enclosure and sleeves.

3. Maintain the enclosure under negative pressure with a HEPA vacuum. Compressed air may be used to remove asbestos fibers from inside the enclosure.

4. Use the HEPA vacuum to loosen the asbestos containing residue from the brake and clutch parts and then to evacuate the material from the enclosure.

5. Wet the vacuum's filter when full with a fine mist of water. Remove and place in an impermeable container. Label and dispose of properly.

6. Immediately clean up any spills and properly dispose of the waste.

Low Pressure/Wet Cleaning Method

1. Place a catch basin under the assembly positioned to avoid splashes and spills.

2. Fill the reservoir with water containing an organic solvent or wetting agent. Gently flood the assembly to prevent the asbestos dust from becoming airborne. Thoroughly wash all old parts before removal.

3. Dispose of water in the sanitary sewer system. If a filter is used, wet with a fine mist of the solution then remove and place immediately in an impermeable container. Properly label and dispose as asbestos waste.

4. Clean up any spills immediately and properly dispose of waste.

5. Dry brushing is prohibited.
Equivalent Methods

1. Any written method that will reduce exposures to a level equivalent to Method A may be used.

2. For purposes of comparison it is assumed that exposures from method A will not exceed 0.016 f/cc as averaged over at least 18 personal samples.

Wet Method

1. This method can only be used if no more than five pairs of brakes or five clutches are inspected or repaired per week.

2. Using a spray bottle or equivalent low pressure system, thoroughly wet the assembly with a fine mist of water or amended water. Wipe the parts clean with a cloth.

3. Place the cloth in an impermeable container. Properly label and dispose of as asbestos waste or launder the cloth in a way that prevents the release of asbestos fibers in excess of 0.1 fibers per cc of air.

4. Clean up any spills immediately and dispose of as asbestos waste.

5. Dry brushing is prohibited.