Asbestos Management Program and Procedures
# Review and Updates

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PURPOSE

Asbestos is a naturally occurring group of fibrous minerals that was used in building construction materials. It was added to many building materials because of its fire resistance, tensile strength, chemical resistance, acoustical properties and nonconductive properties. Asbestos was widely used in building materials prior to 1980. Approximately 80% of the buildings at Northern Illinois University (NIU) were constructed before this time, and asbestos can be found in several different types of building materials used in the construction of the buildings on campus. Asbestos surveys and building inspections indicate that asbestos-containing materials (ACMs) found in university buildings include, but are not limited to, floor tile and mastic, floor sheathing products, pipe and fitting insulation, duct insulation, boiler and tank insulation, acoustical plaster ceilings, spray-applied fireproofing, ceiling tiles, wallboard, tape and joint compound, fire-rated doors, transite panels, laboratory countertops, carpet mastics, baseboard and baseboard mastics, gaskets, caulking, vibration collars and roof flashings.

Asbestos-containing materials become a health concern when they are disturbed, thus releasing fibers into the air. Materials that can be crumbled, pulverized or reduced to powder by hand pressure are considered "friable” and consequently, are likely to release fibers into the air. Examples of friable ACMs include sprayed-applied fireproofing, pipe and boiler insulation, and acoustical plaster ceilings. Non-friable asbestos does not usually release airborne fibers unless it is subjected to cutting, sanding, drilling or grinding. Materials such as vinyl asbestos floor tile and associated mastic, transite panels, laboratory countertops, and roofing felts and flashings are considered non-friable.

Intact, sealed, or undisturbed asbestos-containing materials do not present an exposure risk. When materials are damaged or disturbed, asbestos fibers can become airborne, and exposure may result from fibers being inhaled. Studies have shown that some individuals exposed to asbestos fibers have developed lung cancer, asbestosis (scarring of the lungs), and much more rarely mesothelioma (cancer of the lining of the lung or abdomen). These diseases have generally been observed after long-term exposures from activities that directly disturb ACMs. Typically, they do not develop until 10 to 40 years after exposure.

The purpose of the Asbestos Management Program (AMP) is to reduce or eliminate the risk of employee exposure to ACM. The requirements and procedures associated with asbestos removal activities are also outlined for those individuals that have been trained to perform such activities. Standardizing methods of asbestos management at University properties include:

- Maintaining guidance documentation based upon federal and state regulations;
- Maintaining policies for the identification, assessment, and periodic surveillance of ACM;
- Maintaining a system to distribute information to members of the University community.

Methods that are used include:

- labeling of ACM’s (thermal systems insulation and surfacing materials),
- identification and posting signs limiting access to regulated areas,
- notification of occupants prior to asbestos removal,
training members of the University community and related information available on the Department of EH&S website;

- Minimizing the potential for exposure to members of the University community by developing work practices and procedures and conducting air monitoring during various types of construction, demolition and renovation projects that may involve the disturbance of ACMs.

- Maintaining a protocol for emergency response to fiber release episodes;

- Providing guidance for selection of personal protective equipment (PPE) and awareness training for University employees;

- Maintaining records including: asbestos inspection reports, asbestos abatement project specifications and work plans, contractor close-out documentation, waste profiles and manifests, air sampling data and Capital Development Board (CDB) and Attorney General’s Office correspondence;

- Developing asbestos abatement project designs and work plans as necessary to verify compliance with the regulatory requirements and to protect employee health;

- Retaining an environmental consultant to assist the Asbestos Program Coordinator (APC) in all aspects of asbestos abatement projects on an as needed basis.

This program is designed to complement other university health and safety programs. Questions regarding this plan should be directed to the APC in the NIU Department of Environmental Health and Safety (EH&S). For questions, inquiries, general information or emergencies please contact:

Mary Schlagel, Facilities Health & Safety Officer /Asbestos Program Coordinator (APC)
Office: 815-753-1577    Cell phone: 815-761-3747

Scott Mooberry, Acting Director, Department of Environmental Health & Safety
Office: 815-753-6250    Cell phone: 815-739-2375

Applicable Regulations and Standards

It is the university’s intent to comply with the requirements of United States Occupational Safety and Health Administration (OSHA), Environmental Protection Agency (EPA) and State of Illinois Department of Public Health (IDPH) regulations. These specifically are:

**Occupational Safety and Health Administration, U.S. Department of Labor (OSHA)**

- 29 CFR 1910.134 and Appendixes A, B-1, B-2 and C    Respiratory Protection
- 29 CFR 1910 Subpart D    Walking-Working Surfaces
29 CFR 1910 Subpart I  Personal Protection Equipment
29 CFR 1910.1001 and Appendices A, B, C, D, E, and I  Asbestos (General)
29 CFR 1926.1101 and Appendices A, B, C, D, E, F, H & K  Asbestos (Construction)

United States Environmental Protection Agency (USEPA)

42 USC Section 7401 et seq.  Clean Air Act (CCA)
42 USC Section 112  National Emission Standards for Hazardous Air Pollutants (NESHAP)
15 USC Section 2641-2656  Toxic Substance Control Act (TSCA) Title II
40 CFR 61 Subpart M  National Emission Standards for Hazardous Air Pollutants (NESHAP)
40 CFR Part 763 Subpart G  Asbestos Worker Protection
40 CFR Part 763 Subpart I  Prohibition of Manufacture, Importation, Processing and Distribution in Commerce of Certain Asbestos-Containing Products Labeling Requirements
40 CFR Part 763  Asbestos Hazard Emergency Response Act (AHERA)

State of Illinois

Illinois Department of Public Health (IDPH) Asbestos Abatement Act (105 ILCS 105)
Illinois Department of Public Health (IDPH) Commercial and Public Building Asbestos Abatement Act (225 ILCS 207)
Administrative Code Title 77: Public Health Subchapter p:
Part 855  Illinois Department of Public Health Hazardous and Poisonous Substances
Asbestos Abatement for Public & Private Schools & Commercial & Public Buildings
Subparts A, B, C, D, F, Appendices A, B, C, D, E, F, G, H, I

U.S. Department of Transportation (USDOT)

49 CFR 171 & 172

Miscellaneous

DEFINITIONS

**Abatement** - is a response action, which includes encapsulation, enclosure, repair and maintenance and removal.

**ACM** – Asbestos Containing Material. Any material containing more than 1% asbestos.

**Aggressive Final Clearance Air Sampling** - The act of aggressively agitating the air in an asbestos removal area using fans and/or a leaf blower while final clearance air samples are being obtained.


**Air Sampling Professional** - An individual who performs personal, area and clearance air monitoring during asbestos abatement response activities. This individual shall be licensed by the IDPH.

**Amended Water** - Water that has been mixed (amended) with a chemical wetting agent, or surfactant, to improve penetration and wetting ability.

**APC** - Asbestos Program Coordinator.

**Asbestos** – A fibrous mineral, specifically the asbestiform varieties of actinolite, amosite, anthophyllite, chrysotile, crocidolite, and tremolite.

**Asbestos Analytical Testing Laboratory** - Asbestos analytical laboratories retained by the university shall maintain AIHA accreditation and NVLAP certification in order to perform phase contrast, polarized light, or transmission electron microscopy on material known or suspected to contain asbestos.

**Asbestos Containing Material (ACM)** - materials that have been tested and determined to contain more than 1% asbestos, or are assumed to be in the absence of testing. Also refer to the definition of Presumed Asbestos Containing Material (PACM).

**Asbestos Containing Building Material (ACBM)** – means surfacing ACMs, thermal system insulation ACM, or miscellaneous ACM that is found in or on interior structural members or other parts of a building.

**Asbestos Program Coordinator** - The APC shall be a competent person in accordance with OSHA and oversees all aspects of the APM Program. The APC shall act as the university liaison when corresponding with state and federal regulatory agencies.

**Asbestos Project** - An activity involving job set-up for containment, removal, encapsulation, enclosure, encasement, renovation, repair, construction or alteration of any ACM in quantities greater than three (3) square or three (3) linear feet.

**Authorized person** - means any person authorized by the employer and required by work duties to be present in regulated areas.
CFR - Code of Federal Regulations

**Class I asbestos work** - means activities involving the removal of thermal systems insulation (TSI) and surfacing ACM.

**Class II asbestos work** - means activities involving the removal of ACM that 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, and construction mastics.

**Class III asbestos work** - means repair and maintenance operations, where ACM, including thermal systems insulation and surfacing materials, is likely to be disturbed.

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

**Control Measure** - A measure used to control the generation of airborne asbestos fibers until a permanent solution can be implemented. These measures include encapsulation, repair, encasement and enclosure.

**Delamination** - Physical separation of one layer from another.

**Disturbance** - means activities that disrupt the matrix of ACM, crumble or pulverize ACM, or generate visible debris from ACM. Disturbance includes cutting away small amounts of ACM, no greater than the amount, which can be contained in one standard sized glove bag or waste bag in order to access a building component. In no event shall the amount of ACM disturbed exceed that which can be contained in one glove bag or waste bag which shall not exceed 60 inches in length and width.

**EPA** - The United States Environmental Protection Agency.

**Excursion Limit (EL)** - The employer shall ensure that no employee is exposed to an airborne asbestos fiber concentration in excess of 1.0 f/cc of air averaged over a sampling period of thirty minutes.

**Exposure** - asbestos exposure occurs when airborne fibers are inhaled into the lungs. OSHA has set the permissible exposure limit (PEL) at 0.1 fibers per cubic centimeter as a time-weighted average (TWA) over an 8-hour workday. There should be no exposure in excess of the Short Term Excursion Limit (STEL), which is 1.0 fiber per cubic centimeter of air as a 30-minute TWA.

**Fiber Release Episode** - The unintentional disturbance of ACM resulting either from accidental contact or a result of other factors, such as pipe or roof leaks, where the ACM has been physically dislodged increasing the potential for asbestos fibers to have become airborne.

**Friable** - material which is capable of being crumbled, pulverized or reduced to powder by hand pressure when dry, or which under normal use or maintenance emits or can be expected
to emit fibers into the air. Also includes previously non-friable materials after such
previously non-friable materials becomes damaged to the extent that, when dry, it may be
crumbled, pulverized, or reduced to powder by hand pressure.

**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
material and tools may be handled.

**HEPA** - High Efficiency Particulate Air (HEPA). HEPA filtered equipment must be capable
of trapping and retaining 99.97% of all particles larger than 0.3 microns.

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

**Homogenous Material** - A continuous material of the same age, physical appearance,
texture and color, used for a similar application. A separate homogenous sampling area shall
be defined for each type of homogenous material on each floor of a building.

**IDPH** - Illinois Department of Public Health: administers and enforces the Commercial and
Public Building Asbestos Abatement Act

**IEPA** – Illinois Environmental Protection Agency

**Inspector** - An individual whose primary responsibility is to identify and obtain samples of
ACM for laboratory analysis. Individuals who perform these activities at University
properties are required to have completed initial training under AHERA and maintained
current refresher training. These individuals are also required to have a current Asbestos
Inspector license with the IDPH.

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

**Miscellaneous ACM** - Interior ACM that is not surfacing or thermal system insulation, such
as some floor tile, ceiling tile, wire insulation, asbestos cement products and so forth.

**Negative Exposure Assessment** - Employer demonstrates in accordance with OSHA
regulations that employee exposure during an operation is expected to be consistently below
the PELs.

**Non-friable** – a material, when dry, may NOT be crumbled, pulverized or reduced to powder
by hand pressure.

**NVLAP** - National Voluntary Laboratory Accreditation Program

**Operations & Maintenance (O&M) Program** - Specific procedures and practices
developed for the interim control of ACM in buildings until it is removed.

**Originating Department** - The university department that has responsibility for the space
where work is planned.
OSHA - Occupational Safety and Health Administration, administered by the Illinois Department of Labor (IDOL).

PACM (Presumed asbestos-containing material) - A material, as specified in the OSHA asbestos standard 1926.1101, that is presumed by installation date and type to contain greater than 1% asbestos as determined by laboratory analysis.

Permissible Exposure Limit (PEL) - The highest allowable level of exposure to airborne asbestos fibers that an employee may have, without using respiratory protection, as stated by OSHA.

Personal Protective Equipment (PPE) - Any material or device worn to protect a worker from exposure to, or contact with, any harmful material or force. PPE should be used only if engineering or administrative controls are insufficient to protect against a hazard.

Presumed Asbestos Containing Material (PACM) - means thermal system insulation and surfacing material found in buildings constructed no later than 1980. All materials meeting this definition must be presumed to be asbestos containing and handled as such unless analytical testing proves otherwise.

Project Designer - An individual whose primary responsibility is to develop procedures for the abatement of ACM. Individuals who perform these activities at University properties are required to have completed initial training under AHERA and maintained current refresher training. These individuals are also required to have a current Asbestos Project Designer license with the IDPH.

Regulated Area - An area established by the employer to demarcate areas where airborne asbestos fiber concentrations exceed, or can reasonably be expected to exceed, the permissible exposure limit. Containments established for ACM abatement are considered regulated areas for the purposes of this program.

Renovation - Altering, in any way, one or more facility components.

Repair - Returning damaged ACM to an undamaged condition or to an intact state so as to prevent fiber release.

Respirator - A device worn that purifies the air, or that provides clean air from another source to the wearer. All respirator users must be enrolled in the universities Medical Surveillance Program and must have received appropriate training on respirator use, care, and maintenance.

Response Action - Repair of damage or deterioration to asbestos materials, or the removal of asbestos or asbestos debris, undertaken to alleviate a hazard to building occupants.

SACM (Suspect asbestos-containing material) - Material that has been identified by regulatory agencies as material that may contain asbestos.
Small-scale, Short-duration Asbestos Projects - An asbestos project in which the amount of ACM disturbed is less than three (3) linear feet or three (3) square feet, and disturbance of the ACM is not the primary intent of the project.

Supervisor - A person with the training and experience who meets the qualifications of "competent person" as established by 40 CFR 761. An asbestos project supervisor shall be licensed by the IDPH. An asbestos project supervisor must be present on all asbestos projects that involve the removal of ACM.

Surfacing ACM - ACM sprayed or troweled on surfaces, such as some acoustical plasters, hard wall or ceiling plasters, and fireproofing.

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

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

University - Northern Illinois University and associated properties which include Lorado Taft, Rockford, Hoffman Estates and Naperville campuses and other owned and operated properties in the City of DeKalb.

University Community - University community may be defined as staff, students, visitors and contractors.

University Properties - Buildings or other structures owned or leased by the University for the purpose of conducting University business, research, or operations.

SCOPE

This program applies to all NIU-owned properties containing asbestos-containing (ACM) and presumed asbestos-materials (PACM).

RESPONSIBILITIES

Management Responsibilities

- Ensure employees receive training in accordance with this Asbestos Management Plan (AMP);
- Ensure employees practice safe work procedures in accordance with their training, and use the proper equipment and controls;
- Ensure that employees are not disturbing any materials that are suspected to contain asbestos. Contact the Asbestos Program Coordinator (APC) for testing or clean up/repair if ACM is accidentally disturbed;
- Maintain copies of employee training records.
- Contact the Department of Environmental Health and Safety (EH&S) to request technical assistance.
Employee Responsibilities

- Report any suspect materials to management or the APC prior to disturbance.
- Report accidental disturbances to management or the APC;
- Perform asbestos disturbance activities in a safe manner following work practices and procedures outlined in this asbestos management plan (AMP) while wearing appropriate personal protective equipment as necessary for the type of job performed. Please note: Only licensed asbestos abatement workers may perform such activities.
- Report an injury or illness to management.

EH&S Department Responsibilities

- Review the AMP at minimum annually and revise as necessary.
- Coordinate and contract industrial hygiene services to monitor asbestos abatement activities.
- Schedule, coordinate and provide asbestos training on an annual basis.
- Provide technical assistance upon request.
- Serve as the University liaison for interaction with local, state, and federal agencies on asbestos-related matters.
- Review asbestos project specifications for asbestos abatement projects and O&M projects.
- Maintain all applicable asbestos-related records and documentation.
- Schedule and maintain records of all medical surveillance services, training, air monitoring, and building surveys.
- Ensure the proper disposal of ACM waste.

Contractor Responsibilities

- Asbestos abatement contractors and professional consultants are to observe all federal, state and local regulations related to asbestos and disturbance of ACMs.
- They are to provide their own equipment (refer to the NIU Contractor Safety Program on the NIU EH&S website).
- Contractors and consultants are to provide NIU EH&S Department with a final report in a timely manner.
PRE-CONSTRUCTION ACTIVITIES

Project Planning

This program applies to activities that will or have the potential to disturb ACM located in university buildings. This section addresses asbestos-related concerns when planning a renovation or demolition project. A renovation project is defined as construction, alteration, and/or repair of a university space or property, including painting and decorating. Demolition is defined as maintenance activities that have the potential to disturb ACM. Demolition activities are covered under this program.

As consistent with the capital remodeling process, the Department of EH&S reviews and advises on all remodeling projects prior to project initiation. The Department of EH&S also reviews work orders that may involve the disturbance of ACMs.

Cost Estimates

The generating department may incur costs and fees for the following types of asbestos-related activities:

- Identification (Field survey, sampling, and assessment)
- Abatement (Patch/repair, encapsulation, enclosure or removal of ACMs)
- Third party project design and on-site project management and air monitoring
- Laboratory Analysis
- Disposal fees

Cost estimates do NOT include replacement of building materials (i.e., installing fiberglass insulation or drop ceiling tiles after abatement is complete.)

Building Inspection Guidelines.

Asbestos building inspections must be conducted prior to any renovation or demolition project to determine which building materials may contain asbestos. In the absence of previous asbestos building surveys, representative samples are to be collected from every suspected ACM subject to disturbance by an IDPH-licensed Asbestos Building Inspector and then are analyzed at an independent accredited laboratory. All surveys are conducted according to the requirements set forth in the OSHA Asbestos Construction Standard, EPA NESHAPs, or EPA AHERA standards depending on the specific scope of work. Any building materials not previously tested must be presumed to be asbestos-containing and handled accordingly. An operations and maintenance (O&M) procedure or project design may need to be implemented for each applicable abatement project. These procedures and designs will outline the materials present as well as the abatement techniques to be utilized.

No University property will be exempted from this policy based on date of construction or renovation. Surveys will be conducted utilizing random sampling schemes and multiple sampling as described in AHERA and NESHAP. Samples must be obtained using accepted sampling techniques to minimize fiber release to the environment. Inspection reports will be kept on file in the Department of EH&S.

When independent consultants perform inspections and surveys, personnel requirements and inspection procedures should conform to the requirements of this program. In addition, a report shall be submitted to the Department of EH&S detailing the activities conducted as part of the inspection, laboratory results, and location of samples obtained and delineation of identified ACM on floor plans.
Due to the IDPH practice of testing bulk samples of floor tile by transmission electron microscopy (TEM) instead of the polarized light microscopy (PLM) required by the EPA it is University policy to test floor tile samples by TEM. This is to avoid any delay in projects or fines the IDPH might assess for abating tile that by PLM is not ACM but by TEM is found to contain greater than 1% asbestos.

**Periodic Surveillance and Assessment**

Periodic surveillance of ACM in university properties will be coordinated by the APC.

Assessments of friable materials must be performed as described in this section when an inspection in a university property is performed. ACMs found to be in a "damaged" or "significantly damaged" condition as determined by the APC will be designated as a regulated area and require an immediate abatement action. The abatement action will mitigate the hazard. Assessments will be conducted to identify damaged or significantly damaged ACMs.

**Contract Assistance**

The Department of EH&S will assist Procurement Services and the Physical Plant in the establishment and maintenance of contractual documents to retain qualified environmental consulting firms and licensed asbestos abatement contractors to assist the university in the following activities:

- Training
- On-site project management and air monitoring during abatement projects;
- Surveys and building inspections;
- Work performed under such contracts will be coordinated with the Department of EH&S and funded by the requesting department.

**HAZARD COMMUNICATION**

**Notice to Building Occupants**

Every effort will be made to notify individuals who work in or adjacent to areas where asbestos activities are scheduled to take place. The notification shall provide information regarding the work to be performed and the measures employed to minimize the potential for fiber release. The Department of EH&S will submit a written or verbal notice to the building contact(s) for the area prior to abatement activities. The building contacts are then expected to convey the information to the affected persons. This notice is also sent to the project manager who will inform other employees of contractors and vendors that may be working in the area.

**Notification to Regulatory Agencies**

Asbestos abatement contractors and/or the Department of EH&S will notify the Illinois Environmental Protection Agency (IEPA) via mail 10-working days prior to removal of friable ACMs exceeding 260 linear feet, 160 square feet, or 35 cubic feet. Notifications will be submitted to the IDPH via mail or email two days prior to the removal of ACMs in quantities between three square or three linear feet and 160 square feet, 260 linear feet, or 35 cubic feet. Copies of all notifications are maintained in the Department of EH&S. A revised notification form will be issued to the regulatory authorities if the scope of work is modified.
Regulated Areas

All entrances and approaches to a regulated area are established using "Danger-Asbestos" signage and tape to demarcate areas where airborne asbestos fiber concentrations exceed, or can reasonably be expected to exceed, the Permissible Exposure Limit (PEL).

All Class I through Class III work must be conducted within a regulated area. A regulated area must have the following:

- Shall be demarcated in a manner to restrict persons from entering and protect from exposure to airborne asbestos;
- Shall have signs posted with the following information:
  
  **DANGER**
  
  **ASBESTOS MAY CAUSE CANCER.**
  
  **CAUSES DAMAGE TO LUNGS**
  
  **AUTHORIZED PERSONNEL ONLY**
  
  **WEAR RESPIRATORY PROTECTION AND PROTECTIVE CLOTHING IN THIS AREA**
  
  - Shall not allow employees to eat, drink, smoke, chew tobacco or gum, or apply cosmetics;
  - Shall be supervised by a competent person.

Under no circumstances is a University employee that has not been trained and licensed as an asbestos abatement worker or supervisor allowed to enter a regulated area. In the event of an emergency special provisions will be made by the Department of EH&S for emergency personnel to enter the regulated area.

Some University personnel who enter a regulated area may be required to wear personal air monitoring equipment. Area air monitoring will also be performed during abatement activities to document airborne fiber concentrations inside and outside the regulated work area.

Asbestos Signage

Asbestos signs and labels consist of Danger-Asbestos signs, Caution-Asbestos signs, DOT Class 9 Special Waste labels and generator tags. Danger-Asbestos signs are posted to regulate an area during Class I, II or III activities. Caution-Asbestos signs are posted at entrances to areas containing TSI or surfacing ACMs such as mechanical rooms and janitorial closets to inform building occupants not to disturb the asbestos that is present in these areas. Placement of the labels will be restricted so as to limit visibility to only those building personnel who are authorized to enter these areas. Signs used on university property will conform to OSHA standards and will have the appearance and text as indicated below:
Danger-Asbestos Sign – used to identify areas of asbestos abatement

![Danger-Asbestos Sign](image1)

Caution-Asbestos Sign

![Caution-Asbestos Sign](image2)
Labels may also be affixed to Thermal System Insulation (TSI) and surfacing materials where feasible in lieu of Asbestos-Caution signage. Such labels will conform to OSHA standards and will have the appearance and text as indicated below.

Danger-Asbestos Label

Asbestos waste shall be properly labeled with an asbestos label, generator tag and U.S. DOT Class 9 Special Waste label.

USDOT Class 9 Special Waste Label
**Generator Tag** (no photo)

The generator tag is affixed to or included inside a clear asbestos burial bag between the inner and outer bags or on the outside of a fiber drum. It must identify the building owner, the group that removed the ACM, the name and address of the building and the date the material was removed.

**METHODS OF ABATEMENT**

All asbestos abatement contractors and Physical Plant staff should comply with project specifications and applicable OSHA, EPA and IDPH regulations during abatement activities. In addition, Physical Plant staff should follow the O&M procedures listed in Appendix A for projects in which the scope of work consists of abatement of no more than three square or three linear feet. Methods of abatement include repair, encapsulation, enclosure, and removal. These methods are further described below:

- **Repair**
  
  Repair activities are used for damaged ACM, which meets the following criteria:
  
  o The damage is localized;
  o The area of damage is less than 10% of the continuous area of ACM in a functional space;
  o The area of damage is less than 10 linear feet or 10 square feet; and
  o The volume of debris generated by the activity does not exceed filling one asbestos waste bag.

- **Encapsulation**
  
  Encapsulation is the application of a sealant over the surface of the ACM to prevent the release of asbestos fibers. Encapsulation may only be used if all of the following conditions are met:
  
  1. The area is localized;
  2. The area of damage is less than 10% of the continuous area of ACM in a functional space; and
  3. The total area affected is less than 10 linear feet or 10 square feet

- **Enclosure**
  
  An enclosure is the construction or installation over or around the ACM of any solid or flexible covering, which provides for an airtight barrier that will not deteriorate or decompose for a period of time, so as to conceal the ACM, contain ACM fibers, and render the ACM inaccessible. An enclosure may only be used as a temporary means of isolating the ACM from damage due to work not intended to disturb the ACM.

- **Removal**
  
  Removal is the preferred abatement method when disturbance cannot be avoided. Asbestos-containing materials in quantities less than three square or three linear feet can be removed without submitting a written notification to IEPA or IDPH. Removal of ACM greater than three square or three linear feet meets the definition of an asbestos abatement project and requires a minimum 2-day advanced notice to the IDPH. Procedures for removal activities are outlined in Appendix A (O&M Procedures) of this plan.
GENERAL HOUSEKEEPING PRACTICES

These guidelines are excerpts from an environmental consultant’s study commissioned by the Illinois Attorney General’s Office based upon a lawsuit against manufacturers of asbestos-containing building products.

All asbestos-containing flooring materials must be maintained in the following manner:

- Sanding, grinding, cutting or chipping of flooring materials is prohibited.
- Stripping of finishes should be done using wet methods in conjunction with low abrasion pads (white, pink or green pads) at speeds lower than 300 rpm. Black pads are considered to be high abrasion pads and should not be used. Burnishing or dry buffing should only be done on flooring that has sufficient finish so that the pad cannot contact the flooring material.
- As a preventive measure, floor wax compounds should be applied on a regular schedule especially in high traffic areas in campus buildings. Specifically, wax or sealant should be applied at least once every month in classrooms and at least every two weeks in hallways and corridors.
- Inaccessible (to the general public) fixtures and building components in areas where ACM acoustical plaster ceilings, TSI or other surfacing materials exist should be cleaned and maintained on a regular schedule.
- Only wet mops should be used to clean floors. No dry sweeping or mopping is allowed in areas where ACMs are present. Particular attention should be paid to hard-to-clean areas such as in corners, under tables and along baseboards.

WASTE DISPOSAL

Asbestos-containing debris must be promptly cleaned up by licensed workers and disposed in the proper manner. HEPA filtered vacuums and wet wipes may be used to clean up asbestos debris. Licensed NIU employees must place the labeled and sealed asbestos waste to the in the roll-off asbestos dumpster located on the west side of campus near the Human Resources/Document Services Building. The Department of EH&S will submit necessary manifests for pickup and transport of this dumpster.

All asbestos waste shall be disposed at a landfill accepting special waste. See the project specifications for specific waste handling procedures to the landfill. Abatement contractors are required to arrange for disposal at a proper landfill location and supply the Department of EH&S with the waste manifest records upon receipt.

PERSONAL PROTECTIVE EQUIPMENT

Respiratory Protection

Abatement contractors are responsible for providing a respiratory protection program and respirators to their employees. Licensed asbestos abatement workers and supervisors in the Physical Plant have been issued respirators by the Department of EH&S. These employees must be medically qualified for respirator use prior to issuance and on an annual basis thereafter. Appropriate respirators shall be worn when conducting the following activities:

- Class I activities;
- Class II activities where ACM is not intact;
- Class II and III activities where wet methods are not used;

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Class II and III activities that do not have a negative exposure assessment;
Class III work involving thermal systems insulation or surfacing materials;
Work where employees are exposed, or may be potentially exposed, to airborne fiber concentrations above the PEL or EL;
In emergencies.

Respiratory protection that has been issued for abatement activities includes full or half-mask, tight-fitting, air-purifying respirators with HEPA filter cartridges. Powered air-purifying respirators (PAPR) with a HEPA filter may be available upon request or if the project warrants use of a PAPR. During mastic removal, air-purifying respirators should be equipped with a dual HEPA/organic vapor cartridge combination.

All respirators will be qualitatively fit tested by the Department of EH&S or designated training vendors. All mandatory users will be required to be fit tested annually. As facial hair interferes with the seal of the respirator, allowing contaminants to pass into the user’s lungs, a respirator user with facial hair will not be fit tested and shall not perform those duties requiring use of a respirator until clean shaven and fit tested again. The user must be clean shaven whenever using a respirator, not just at time of fit testing.

Please refer to the Department of EH&S Respiratory Protection Program on the NIU EH&S website and on file in the EH&S Department for more information.

**Protective Clothing**

Licensed asbestos abatement employees will be supplied with protective clothing consisting of disposable Tyvek or cloth suits, protective boots and gloves, safety glasses and other personal protective equipment (PPE) as necessary. Employees shall double-suit before entering a regulated work area where shower facilities are not provided.

Suits, boots, and gloves should be routinely inspected for rips or tears while working. Damaged protective clothing shall be sealed with duct tape or immediately replaced. All contaminated clothing shall be disposed as asbestos waste.

**HYGIENE FACILITIES**

Decontamination units must be established for Class I work that is greater than 25 linear or 10 square feet of friable ACM. The decontamination (decon) unit shall, at a minimum, consist of a three chambers including an attached equipment room, shower area, and clean room. These units must be set up adjacent to and connected to the work area within the regulated area. All authorized employees must enter and exit through the decon unit to access the contained work area.

Decons are also required for Class I work less than 25 linear or 10 square feet, Class II and III work where exposures exceed the PEL or EL, or where there is no negative exposure assessment. An equipment decon unit must be established adjacent to the regulated area for the decontamination of employees and equipment. At a minimum, it must consist of an impermeable drop cloth on the floor surface. Suits must be HEPA vacuumed before removal. All equipment and the exteriors of ACM waste bags must also be cleaned prior to removal. All authorized employees must enter and exit through the decon unit to access the contained work area. The same is required of Class 3 operations and maintenance work of 3 linear feet or 3 square feet or less of ACM is to be removed.
TRAINING AND LICENSING REQUIREMENTS

Annual Asbestos Training

Several types of annual asbestos training are provided for employees working around asbestos. Those employees that perform a Class IV activity or have the potential to come into contact with but not disturb asbestos, shall participate in an OSHA mandated two-hour annual asbestos awareness class. Those employees that perform Class I, II, or III activities shall be required to obtain and maintain an asbestos abatement worker or supervisor license issued by IDPH. Licensed workers and supervisors are required to attend an initial 40-hour contractor/supervisor course and annual 8-hour contractor/supervisor refresher courses thereafter. The training shall be valid for one year.

Licensing Requirements

Individuals who perform any Class I, II, or III activity or any abatement activity as outlined in the “Methods of Abatement” section shall meet the requirements of a licensed asbestos abatement worker or supervisor as defined in this program. Other licensed NIU asbestos professionals shall comply with annual course requirements to maintain licensure.

Each asbestos project shall be managed by a competent person, who is licensed as either an asbestos project supervisor or asbestos project manager. Projects requiring that a work plan or project specification be developed shall be designed by a licensed project designer. Such projects will be monitored by licensed Department of EH&S staff or a third party environmental consultant, licensed as either an asbestos project manager or air sampling professional. Air samples shall be collected by a licensed air sampling professional. Bulk samples shall be collected by a licensed asbestos building inspector.

MEDICAL SURVEILLANCE

The Department of EH&S maintains a Medical Surveillance Program in conjunction with an occupational health provider. Licensed employees performing abatement activities or employees exposed at or above the PEL for a combined 30 days or more per year will be included in this program. Employees are required by this program to wear respiratory protection and must be physically able to perform the work and use the equipment. This determination shall be made under the supervision of a physician.

Medical surveillance is required upon initial assignment to a job involving asbestos abatement and annually thereafter. The APC is responsible for overseeing coordination and scheduling of all necessary medical testing.

Asbestos licensed personnel are to receive a physical exam and pulmonary function test annually and a chest X-ray on the basis provided in OSHA regulations. Asbestos licensed personnel are to receive a final physical exam, pulmonary function test and chest X-ray at end of employment.

All records regarding employee exposures and physician’s written opinions are kept on file at the Department of EH&S. All information will be maintained for the duration of employment plus 30 years. Medical information is confidential and can only be accessed by the employee or the employee’s physician.

RECORDKEEPING

The Department of EH&S shall have primary responsibility for maintaining records required by regulatory agencies. Activities conducted under the purview of this program shall be reported to the Department of EH&S.
The Department of EH&S shall maintain a file on each campus building which will be used as the basis for reviewing work order requests and capital remodeling projects and providing notification to regulatory authorities as specified in this plan. The following records are kept on file in the Department of EH&S:

- Asbestos abatement reports;
- Project specifications;
- Air sampling data;
- Inter-departmental memos and correspondence on asbestos abatement activities;
- Waste manifest receipts;
- Asbestos management plans and building inspections;
- Medical surveillance forms (confidential);
- Completed fit-test forms;
- Proposals, fee schedules and other budgetary information.

These files are available for review upon request. However, employees only have access to their own medical surveillance file. Documents shall not be copied without the consent of the APC. Files are only available for review in the Department of EH&S and cannot be removed from the department office.

AIR MONITORING PROGRAM

The Department of EH&S staff, and/or industrial hygiene consultants, conduct air monitoring during asbestos abatement projects performed by abatement contractors or Physical Plant staff. EH&S staff, and/or the consultants who have current air sampling professional licenses, conduct personal, area, and final clearance air monitoring to ensure that asbestos fiber concentrations are below established standards.

Methods of sampling include the NIOSH Method 7400, Phase Contrast Microscopy (PCM) and NIOSH Method 7402, Transmission Electron Microscopy (TEM). PCM involves collection of a volume of air on a 25 mm mixed cellulose ester filter and on-site analysis using an optical microscope. All consultants are required to complete the NIOSH 582 course for asbestos fiber counting. On occasion TEM is used during final clearance air monitoring especially if the removal project is located adjacent to other occupied areas of the building. This method involves collection of a volume of air on a 37 mm poly vinyl chloride (PVC) filter and analysis in an accredited laboratory using an electron microscope.

The OSHA permissible exposure level (PEL) for exposure to airborne asbestos is 0.1 fibers per cubic centimeter of air (f/cc) in an 8-hour time weighted average (TWA). That level, and the Excursion Limit (EL) of 1.0 f/cc in a 30-minute sample, should not be exceeded.

Negative exposure assessments are made to ensure employees are not exposed to asbestos at greater levels than the Permissible Exposure Limit described above. Negative exposure assessments are categorized by type of ACM material, work practices, environmental conditions and control methods, and must closely resemble those of the activity to be represented. The assessment can be used to show that levels for a given job will be below the PEL and EL, so that lower levels of respiratory protection can be used.
Personal Air Monitoring
The APC may conduct personal air monitoring on Physical Plant employees who are using the work procedures outlined in Appendix A. In small scale, short duration activities when clearance air monitoring is not required under applicable regulations, personal and area air monitoring data will be used to evaluate work activities and re-occupancy requirements.

Area Air Monitoring
Area air monitoring shall be conducted as specified by applicable federal and state regulations to verify the integrity of the regulated work area and that there are no asbestos fibers migrating from the containment.

Clearance Air Monitoring
The IDPH clearance level of 0.01 f/cc by PCM analysis is required for any project involving greater than three square or three linear feet of ACM that is performed within a negative pressure enclosure. The University strives to ensure that the clearance levels are also below the EPA recommended level of 0.01 f/cc by PCM analysis. If TEM analysis is performed for clearance purposes, results should be less than 70 structures per millimeter squared.

Clearance monitoring shall be performed at the completion of each project greater than three square or three linear feet in size. When a project is of small-scale, short duration, personal air sampling conducted while the work was performed shall be considered sufficient for use as a clearance air sample, if the following conditions are met:

- The work activity was not conducted utilizing a negative pressure containment;
- The sample result of the personal sample indicates a fiber concentration less than the regulated clearance level for re-occupancy; and
- The sample was run for the duration of work including cleanup.

LABORATORY ANALYSIS PROGRAM
Air Sampling Professional licensed EH&S staff or its designated air sampling professional contractor will submit samples (air and bulk) to a contract laboratory that participates in the National Voluntary Laboratory Accreditation Program (NVLAP) supported by the National Institute of Standards and Testing (NIST). Selected samples, as determined by the Department of EH&S, read on-site by contract personnel may be requested for submission to the contract laboratory for quality control. The following analytical methods may be used to evaluate asbestos fiber concentrations.

- Phase Contrast Light Microscopy (PCM) Analysis
  PCM sample analyses shall be performed in accordance with the most recent of Appendix A to 29 CFR 1910.1001 or NIOSH method 7400.

- Polarized Light Microscopy (PLM) Analysis
  PLM sample analyses shall be performed in accordance with the most recent of USEPA specification defined in the Interim Method for the Determination of Asbestos in Bulk Insulation Samples, 40 CFR 763 or NIOSH method 9002.

- Transmission Electron Microscopy (TEM) Analysis
TEM sample analyses shall be performed in accordance with the most recent of USEPA 40 CFR 763, Appendix A or NIOSH method 7402.

Although EPA requires that bulk samples be tested by PLM, the Illinois Department of Public Health (IDPH) tests floor tile samples by the more sensitive TEM. It is for this reason NIU tests floor tile samples by transmission electron microscopy.

IDPH has verbally clarified to us however, that if a box of floor tile says “Does not contain asbestos” IDPH considers it a non-asbestos containing product.

NIU also uses TEM air sampling post clearance for occupied areas.
APPENDIX: Operations and Maintenance
O & M WORK PRACTICES AND PROCEDURES

Operations and maintenance (O & M) work that may disturb asbestos containing materials (ACM) requires the use of special techniques for the protection of the worker and those people in the immediate area. A disruption of ACM is any activity that crushes, pulverizes or disrupts the matrix of ACM or generates a visible dust. The amount of ACM disturbed in any O & M activity should involve no more than 3 square feet (sf) or 3 linear feet (lf) and produce no more waste than will fit in one 60” x 60” ACM disposal bag or one standard glovebag. The worker should use recognized asbestos control techniques. Any work involving clean up, repair or removal of ACM must be done by a worker licensed to deal with asbestos.

OSHA has defined four classes of work involving these materials:

- Class 1 deals with abatement of TSI and surfacing ACMs.
- Class 2 deals with abatement of miscellaneous ACMs.
- Class 3 covers operations and maintenance work involving ACMs or PACMs. This frequently involves disturbing or disrupting the ACM.
- Class 4 covers custodial work where employee may contact, but do not disturb ACM & PACM. This type of work should not generate more ACM waste. It applies to clean-ups of any type of ACM.

Class 3 involves use of:

- Asbestos O & M training;
- Secured and regulated work areas;
- Drop-cloths and plastic barriers;
- Personal protective equipment (suits and respirators) when disturbing TSI or surfacing ACMs to minimize exposure to the individual doing the work and to bystanders;
- Local exhaust ventilation with a HEPA vacuum;
- Mini-containments or glovebags when disturbing TSI or surfacing materials;
- Engineering controls such as a HEPA filtered negative pressure unit or HEPA vacuum when using mini-enclosures or glovebags;
- Wet methods
- Air monitoring if necessary;
- Lockdown encapsulants if needed; and
- Prompt cleanup and disposal of existing waste;
- Disposal of waste in ACM labeled bags.

Use of high-speed abrasive saws is not recommended except under very special circumstances. Class 3 work is limited to situations that generate no more than one glovebag or one ACM disposal bag of waste.

Class 4 work is involves following these workplace procedures:
• Wet wipe surfaces with damp rag or electrostatic material to wipe up dust.
• Wet mop rather than dry sweep floors.
• Avoid:
  o Sanding asbestos containing flooring
  o Stripping floors using abrasive pads at a greater than 300 rpm
  o Dry stripping
  o Burnishing or dry buffing floors without sufficient finish on them to keep the pad out of contact with the flooring material.

THIS APPENDIX IS CONCERNED WITH CLASS 3 WORK PROJECTS.

O & M GENERAL PROCEDURES
• Ask any bystanders and those working in the affected area to leave until after the ACM related work is completed.
• Secure the work area. If possible, lock doors to deny access. Regulate the area with barrier tape and signs. If doors cannot be secured, mark off the work area with red “Danger Asbestos” barrier tape.
• Don respirator and protective clothing. Protect yourself.
• HEPA vacuum the area.
• Wet wipe ACM contaminated surfaces.
• Place ACM waste, protective suit, etc., in an ACM disposal bag. Soak debris with water and properly seal the bag.
• Visually inspect area to verify that no ACM debris remains.
• Remove barrier tape and signs. Inform occupants the area is available again.
• Transport waste bags to asbestos waste storage area.

Cleanup and teardown. These are the steps asbestos licensed individuals are to follow with at the end any ACM O&M activity:

Apply lockdown encapsulant where the ACM had been removed or disturbed.

Bag ACM waste for disposal. Verify that each waste bag is properly sealed, double-bagged and labeled with a generator tag, “Asbestos-Danger” and Department of Transportation (DOT) Miscellaneous Class 9 Special Waste label.

HEPA vacuum the area.

Wet wipe and HEPA vacuum tools and put tools outside the work area.
Decontaminate waste packages and put outside the work area.

HEPA vacuum clothes prior to removal. Dispose of contaminated clothing as ACM waste.

Carefully pick up drop sheet (rolling it inward from the sides to avoid dropping any waste on the floor) and dispose of it as ACM waste.

HEPA vacuum area under and around the drop sheet.

Decontaminate the outside of your respirator.

Remove your respirator and clean it.

Seal or dispose of your respirator filters.

Decontaminate your hands. Wash up.

Perform a visual inspection to verify the ACM has been removed and the work restored. (If feasible, have the asbestos program manager (APM) check out the work area.)

Remove any residue left on surfaces by the tape used to create critical barriers.

Remove any Lockout / Tag-out tags you put on and restart the systems.

Inform the APM and the supervisor that the work has been completed.

Store decontaminated equipment, tools and materials.

Transport waste to the asbestos waste storage area.

Restore normal accessibility to the area (i.e., deregulate area, allow occupants to enter.)

Work procedures for Surfacing, Thermal System Insulation (TSI) and Miscellaneous category ACMs and PACMs follow.
Surfacing Materials O & M Procedures

ANY WORK ON FIREPROOFING OR ACOUSTICAL PLASTER
Fireproofing and Acoustical Plaster are special cases due to the unique characteristics of these ACMs. Even as O & M work, this requires input from the Asbestos Project Manager (APM). Consult with the APM as soon as possible to plan out work methods.
Install Wiring in Plenum Where Exposed ACM is Present

Secure work area to keep people out of area.

Regulate area with red “Danger Asbestos” tape and signs.

Lay a continuous run of poly under the area where the cable is to be installed. Secure it to prevent slips and trips.

Set up the mini-containment and negative pressure unit.

Place HEPA vacuum in the mini-containment. Use a hose long enough to reach above the suspended ceiling to the work area.

Don respirator and protective clothing.

Carefully lift and place to one side one ceiling tile to leave an access hole to the plenum.

HEPA vacuum the tops of the ceiling tiles around the access hole.

Mist with amended water any fireproofing that may be disturbed.

If practical, install a poly drop sheet at ceiling level to catch ACM dust or debris.

Wet wipe cable after it has run past ACM.

Saturate the debris on top of the drop sheet.

Dispose of sheet and debris in ACM disposal bag.

Spray tops of ceiling tiles with encapsulant and replace last tile.

Cleanup and teardown.
Move One Non-ACM Ceiling Tile Located Below a Plenum Containing Exposed Surfacing ACM.

Secure work area to keep people out of area.
Regulate area with red “Danger Asbestos” tape and signs.
Lay a poly drop sheet under work area.
Set up the mini-containment and negative pressure unit.
Place tools and HEPA vacuum in the mini-containment. Use a hose long enough to reach above the suspended ceiling to the work area.
Don respirator and protective clothing.
Carefully lift and place to one side one ceiling tile to leave an access hole to the plenum.
HEPA vacuum edges and top of tile and the tops of the ceiling tiles around the access hole.
Mist plenum and tops of ceiling tiles with amended water.
Put any debris in ACM disposal bag.
Do the required operation or maintenance work.
Vacuum all sides of the tile and replace.
Package waste.
Decontaminate ladder, tools, materials, clothes.
Decontaminate mini-containment for re-use or dispose of it and the protective suit as ACM waste.
Dispose of sheet and debris in ACM disposal bag.
Wet wipe area under opened ceiling.
Cleanup and teardown.
Cut or Drill into Surfacing ACM, Attach, Repair or Replace an Item Attached to a Surfacing ACM

- Secure work area to keep people out of area.
- Regulate area with red “Danger Asbestos” tape and signs.
- Lay a poly drop sheet under work location.
- If feasible, set up a glovebag or mini-containment with a negative pressure unit.
- Place HEPA vacuum in the mini-containment or connect to glovebag.
- Don respirator and protective clothing.
- Wet work location.
- Do the required operation or maintenance.
- Keep work location damp while drilling or cutting.
- Encapsulate holes.
- Put all ACM debris and waste in ACM labeled disposal bag.
- Cleanup and teardown.
Change Bulbs in a Fixture Attached to an ACM Surface

Secure work area to keep people out of area.
Regulate area with red “Danger Asbestos” tape and signs.
Lay poly sheeting under work location.
Don respirator and protective suite.
Replace bulbs.
Clean up dust or debris with HEPA vacuum.
Dispose of ACM waste in ACM bag.
Painting an ACM Surface.

(At 3 square feet or less, this is a touchup only.)
Secure work area to keep people out of area.
Regulate area with red “Danger Asbestos” tape and signs.
Lay a poly drop sheet under the work area.
If feasible, set up a mini-containment and negative pressure unit.
Don respirator and protective clothing.
Use a pump-style (low velocity airless) sprayer if the surface is acoustical plaster or fireproofing.
When finished, dispose of drop sheet and any rollers, etc., that have touched the ACM surface.
HEPA vacuum or wet wipe to clean the area under and around the drop sheet.
Cleanup and teardown.
Repair Damaged Surfacing ACM.

Secure work area to keep people out of area.
Regulate area with red “Danger Asbestos” tape and signs.
Lay a poly drop sheet under the work area.
Set up a mini-containment and negative pressure unit. (Required with surfacing ACMs.)
Place HEPA vacuum and tools inside the mini-containment.
Wet down damaged area.
Remove loose material.
Encapsulate edges.
Use a non-ACM material to repair damaged area.
Cleanup and teardown.
Thermal System Insulation (TSI) O & M Procedures

Clean up ACM Debris in Tunnel or Crawlway

**Note:** If the work is in a confined space, see the NIU Confined Space Work Rules. (This work requires a minimum of two workers--one inside, and one outside of the confined space for communication and rescue.)

Secure work area to keep people out of area.
Regulate area with red “Danger Asbestos” tape and signs.
Don respirator and protective clothing.
Lay a poly drop sheet just outside the work area.
Seal the area to create a mini-containment. Do not cover the floor.
Set up negative pressure unit.
Wet floor and debris.
Place debris in an ACM disposal bag.
If further repair or abatement of TSI is required, do it within confinement.
HEPA vacuum the floor within mini-containment.
Cleanup and teardown.
Install a Device or Access the Surface of Piping, Fitting, Duct, Boiler or Flue Covered with ACM Insulation

Secure work area to keep people out of area.
Regulate area with red “Danger Asbestos” tape and signs.
Lay a poly drop sheet just outside the work area.
Don respirator and protective clothing.
Use a glovebag in removal of ACM insulation.
If a mini-containment is used, keep the nozzle of the HEPA vacuum in the workzone to capture fibers and debris.
Do the required work.
Repair or re-insulate with non-ACMs.
Cleanup and teardown.
Repair Damaged ACM Insulation on Pipe, Fitting, Duct, Boiler or Flue

Secure work area to keep people out of area.
Regulate area with red “Danger Asbestos” tape and signs.
Lay a poly drop sheet just outside the work area.
Don respirator and protective clothing.
Glovebag damaged area of ACM insulation.
Wet area to be repaired.
HEPA vacuum to remove loose or damaged material.
Cut out damaged TSI with HEPA vacuum nozzle at point of operation to capture fibers or debris.
Repair or re-insulate with non-ACMs.
Cleanup and teardown.
Remove ACM Pipe or Duct Insulation on HVAC Unit for Maintenance Work

Secure work area to keep people out of area.
Regulate area with red “Danger Asbestos” tape and signs.
Lay a poly drop sheet just outside the work area.
Set up a mini-containment with negative air unit or glovebag.
Don respirator and protective clothing.
Wet insulation down with amended water.
Remove insulation with the nozzle of the HEPA vacuum at the point of operation.
Use a wet nylon brush (not a wire brush) to scrub down the pipe or duct.
Seal with lockdown encapsulant.
Do the required maintenance.
Cleanup and teardown.
Remove ACM Pipe or Duct Insulation Above a Suspended Ceiling or in an Elevated Location

Note: Use fall protection at work elevations of six feet or greater.

If work is above a suspended ceiling, carefully lift a ceiling panel and slide it to one side.
HEPA vacuum tops of panels around opening and keep the HEPA nozzle in that area above the ceiling.
Attach glovebag.
Wet insulation with amended water.
Remove insulation.
Clean surface of pipe and seal it with lockdown encapsulant.
Remove glovebag. Lower it to the floor. Do not drop.
Do required maintenance work.
Cleanup and teardown.
Miscellaneous Asbestos Materials O & M Procedures

Clean up

**Dusting** – Use a damp rag or electrostatic material to wipe up dust, then HEPA vacuum.

**Carpeted Floor** – HEPA vacuum the floor. Do not use a non-HEPA vacuum.

**Non-Carpeted Floor** – Damp mop, then wash. Do not use a dry duster or non-HEPA vacuum.

**Drapes, Fabrics** – HEPA vacuum drapes top to bottom, then HEPA vacuum floor last.
CLEAN CARPET CONTAINING ASBESTOS DUST (CLASS 3)

**Note:** At Class 3, this would likely be a part of a larger incident remediation.

Secure work area to keep people out of area.
Regulate area with red “Danger Asbestos” tape and signs.
Don respirator and protective clothing.
HEPA vacuum carpeting using carpet attachment.
Make parallel passes overlapping by half the width of the beater bar.
Do a second cleaning at right angles to the first.
Steam clean the carpet in overlapping passes.
Repeat at right angles to the first.
Filter the water before disposal.
Dispose of filtrate as ACM waste.
Cleanup and teardown.
Change Filter or Bag in HEPA Vacuum or Negative Air Pressure Unit

**Note:** This must be done in containment. Take all precautions. What is trapped in the bags and filters are the most easily respired particles of asbestos.)

Secure work area to keep people out of area.

Set up a mini-containment with negative air unit if one does not already exist.

Set tools, supplies, replacement bags and/or filters and an additional HEPA vacuum inside the mini-containment.

If the negative air machine’s filters are to be changed, lay out two sheets of poly to wrap the HEPA filter in. This filter will not fit in an ACM disposal bag.

Don respirator and protective clothing.

Make certain the vacuum or negative air unit to be cleaned is turned off and disconnected from any power source.

Open dirty vacuum or negative air pressure unit.

Wet down the bag or filters with amended water.

Remove dirty filters or bag and place in an ACM disposal bag.

Use second HEPA unit to vacuum out first vacuum or negative air pressure unit.

Wet wipe inside of unit.

Install clean bag or filters.

Close up unit

Wet wipe exterior of unit.

Decontaminate tools and equipment.

Cleanup and teardown.
Cut or Drill

Cut or Drill ACM Drywall, Plaster, Tape or Joint Compound

Note: Shock Hazard. Be careful when using water and power tools.

Secure work area to keep people out of area.
Regulate area with red “Danger Asbestos” tape and signs.
Lay down poly drop sheet.
Set up mini-containment and negative pressure unit.
If the back side of the wall is likely to be penetrated, contain that area under negative pressure as well.
Don respirator and protective clothing.
Wet the area to be cut with amended water.
Cut or drill with the nozzle of the HEPA vacuum at the point of operation.
Remove pieces and place in an ACM disposal bag.
HEPA vacuum the front and back of the hole.
Encapsulate exposed edges.
Remove the backside enclosure, wet wipe that area.
Do the required operation or maintenance.
Cleanup and teardown.
CUT OR DRILL ACM CEMENT PANEL (TRANSITE)

Note: Shock hazard. Be careful when using water and power tools.

Secure work area to keep people out of area.
Regulate area with red “Danger Asbestos” tape and signs.
Lay down poly drop sheet.
If feasible, set up a mini-containment with negative air pressure unit.
If the back side of the wall is likely to be penetrated, contain that area under negative pressure as well.
Don respirator and protective clothing.
Wet the area to be cut with amended water.
Cut or drill with the nozzle of the HEPA vacuum at the point of operation.
Remove pieces and place in an ACM disposal bag.
HEPA vacuum the front and back of the hole.
Encapsulate exposed edges.
Remove the backside enclosure, wet wipe that area.
Do the required operation or maintenance.
Cleanup and teardown.
Other options for cutting and drilling (the Shaving Cream Method)

**Note:** Many shaving creams have a flammable material as a propellant. Be careful using it. Consider the Shaving Cream Method a secondary solution to containment and collection. HEPA vacuuming at the source of disturbance is preferred.

The Shaving Cream Method

Secure work area to keep people out of area.
Regulate area with red “Danger Asbestos” tape and signs.
Lay down poly drop sheet.
Don respirator and protective clothing.
Mist the area to be drilled with amended water.
Poke a hole in the bottom of a paper, disposable plastic or Styrofoam cup.
Put drill bit through the hole in cup so debris can be caught in cup.
Fill cup with shaving cream. (Shaving cream works better than shaving gel.)
Set drill bit in place and drill hole. (Shaving cream acts as amended water and captures ACM debris.)
Remove foam-filled cup and place in an ACM disposal bag.
Wet wipe surface and clean off bit, place wipe in ACM disposal bag.
Encapsulate exposed edges of ACM.
Do the required operation or maintenance.
Cleanup and teardown.
Removal

Remove ACM Gasket or Packing

Note: Shock Hazard. Be careful when using water and power tools.

Shut down HVAC unit. Lockout and tagout.
Secure work area to keep people out of area.
Regulate area with red “Danger Asbestos” tape and signs.
Lay a poly drop sheet under the work area.
If the temperature will not exceed 150 degrees F, use a glovebag. If the temperature of the surface will be too high or if the unit to be maintained cannot fit inside a glovebag, set up a mini-containment and negative pressure unit.
Don respirator and protective clothing.
Open up unit to access gasket or packing.
Wet the gasket or packing with amended water.
Scrape gasket or packing from its seat. Have the nozzle of the HEPA vacuum at the point where the gasket or packing separates from the flange or packing box.
Put the pieces in an ACM disposal bag.
HEPA vacuum up any debris.
Wet wipe the seat.
Keep the work zone wet.
HEPA vacuum and wet the surface where the item was attached. Do not use a wire brush (either that on a power tool or by hand) to remove any residue.
Install new gasket or packing.
Reassemble equipment.
Cleanup and teardown.
Remove ACM Drywall

Secure work area to keep people out of area.
Regulate area with red “Danger Asbestos” tape and signs.
Lay a poly drop sheet under the work area.
If feasible, erect a mini-containment with negative air pressure unit.
Don respirator and protective clothing.
Use amended water to wet area of drywall to be removed.
Cut perimeter. If possible, keep nozzle of HEPA vacuum at the cut.
Open hand-grips.
Mist cavity and back side of drywall.
Pull so the drywall folds.
Package for disposal. If section removed is too large for an ACM disposal bag, seal in two layers of poly and attach appropriate labels (‘Danger Asbestos,’ DOT and generator tag).
Encapsulate edges.
Remove fasteners, clean off debris with amended water and a nylon brush.
HEPA vacuum and wet wipe work area to capture any dust generated in the removal.
Do required operations or maintenance work.
Pack up debris and waste in ACM disposal bag.
Cleanup and teardown.
**Remove ACM Ceiling Tiles** (Lay-in or Spline Ceiling Systems)

- Secure work area to keep people out of area.
- Regulate area with red “Danger Asbestos” tape and signs.
- HEPA vacuum the area under the tiles to be removed.
- Lay a poly drop sheet under the work area.
- Set up a mini-containment with negative air pressure unit.
- Don respirator and protective clothing.
- Mist tiles with amended water.
- Remove tiles and place in an ACM disposal bag.
- HEPA vacuum the suspension components the tiles had touched, then wet wipe.
- Cleanup and teardown.
Remove ACM Glued-On Ceiling Tiles

Secure work area to keep people out of area.
Regulate area with red “Danger Asbestos” tape and signs.
HEPA vacuum the area under the tiles to be removed.
Lay a poly drop sheet under the work area.
Set up a mini-containment with negative air pressure unit.
Don respirator and protective clothing.
Mist tiles with amended water.
Cut outer ½” from tongue/groove edge of tile.
Pull tile away and off ceiling
Place tile and debris in an ACM disposal bag.
Wet and scrape away glue residue, wet wipe surface.
HEPA vacuum area.
Cleanup and teardown.
Remove ACM Paper or Cloth on Ductwork

Secure work area to keep people out of area.
Regulate area with red “Danger Asbestos” tape and signs.
Lay a poly drop sheet under the work area.
Use a glovebag, or if feasible set up a mini-containment with negative air pressure unit.
Don respirator and protective clothing.
Wet material to be removed with amended water.
Remove material and wet it again.
Place material in an ACM disposal bag if it is not already in a glovebag.
HEPA vacuum and wet wipe duct and the floor beneath it.
Do required maintenance or operations work.
Cleanup and teardown.
Remove ACM Flex Duct Connector

Secure work area to keep people out of area.
Regulate area with red “Danger Asbestos” tape and signs.
Shut off power and lock out/tag out unit.
Seal duct or HVAC unit on either side of the flex connector (critical barriers).
Lay a poly drop sheet under the work area.
Don respirator and protective clothing.
Wet the flex connector and flanges with amended water.
Remove screws while holding connector.
Clean screws with water and a nylon brush if the screws are to be kept.
Slide connector off ductwork and place it in an ACM disposal bag.
HEPA vacuum the inside of the duct to either side of the connector.
Do required maintenance or operations work.
Remove critical barriers.
Cleanup and teardown.
Remove lock out/tag out and restart unit.
REMOVE HVAC FILTERS

Shut down HVAC unit. Lockout and tagout.
Secure work area to keep people out of area.
Regulate area with red “Danger Asbestos” tape and signs.
Lay a poly drop sheet under the work area.
Don respirator and protective clothing.
Saturate filter with amended water.
Remove filter and put it in an ACM disposal bag.
HEPA vacuum the inside of the duct and wet wipe floor and inside of unit.
Install clean filter and pre-filters.
Cleanup and teardown.
Remove lock out/tag out and restart unit.
Remove ACM Fire-doors and/or Hardware

Remove ACM Fire-door

Secure work area to keep people out of area.
Regulate area with red “Danger Asbestos” tape and signs.
Lay a poly drop sheet under the work area.
Don respirator and protective clothing.
Wet damaged areas with amended water.
Remove door from frame.
Remove hardware from door.
Wash any parts for be saved, dispose of the rest as ACM waste.
Lay two sheets of poly on the floor.
Lay the door on the poly, wrap, seal and label properly for disposal.
HEPA vacuum the poly drop sheet.
Cleanup and teardown.
REPLACE HARDWARE ON ACM DOOR.

Secure work area to keep people out of area.
Regulate area with red “Danger Asbestos” tape and signs.
Lay a poly drop sheet under the work area.
Don respirator and protective clothing.
Wet area to be worked on with amended water.
Remove and dispose of hardware as ACM waste.
HEPA vacuum work area on the door.
Install new hardware.
Cleanup and teardown.
REMOVE ACM CHALKBOARD

Secure work area to keep people out of area.
Regulate area with red “Danger Asbestos” tape and signs.
Lay a poly drop sheet under the work area.
Don respirator and protective clothing.
Wet the board, including the sides and top, to dampen any debris behind it.
Remove fasteners, the remove the board from the wall.
Wet the glue both on the board and on the wall with amended water.
Lay two layers of poly sheeting on the floor.
Lay the chalkboard on the poly sheeting.
Mist the board, then wrap, seal and label for ACM disposal.
Mist and scrape glue from the wall.
HEPA vacuum wall and floor beneath.
Wet wipe wall and floor beneath.
Clean up and teardown.
Remove ACM Transite Panels

Secure work area to keep people out of area.
Regulate area with red “Danger Asbestos” tape and signs.
Lay a poly drop sheet under the material to be removed.
Don respirator and protective clothing.
Wet panel with amended water. Keep panel wet.
Dampen fasteners during removal.
Remove panels without breaking the panel further.
Place pieces in an ACM disposal bag or seal in two layers of poly sheeting.
If working at elevation, lower the bag or package to the ground. DO NOT DROP.
HEPA vacuum and wet wipe the area.
Do the required operations or maintenance.
Cleanup and teardown.
Remove ACM Transite Cooling Tower Louvers

Note: Fall protection is required for work at elevations over 6 feet.

Secure work area to keep people out of area.
Regulate area with red “Danger Asbestos” tape and signs.
Shut down and lock out/tag out cooling tower systems.
Lay a poly drop sheet under the material to be removed.
Don respirator and protective clothing.
Wet panels with amended water. Keep panels wet.
Dampen fasteners while they are being removed.
Wash any fasteners to be kept, dispose of them as ACM waste if not.
Remove louvers without breakage to ACM disposal bags or seal them in two layers of poly sheeting. Bag chips and debris.
Lower bags or packages to the ground. Do not drop.
Wet wipe the surfaces the louvers had contacted.
Do required maintenance or operation.
Cleanup and teardown.
Remove ACM Built-Up Roofing, Asphalt Shingles or Roof Flashing

**Note:** Slipping Hazard. Fall protection is required for work at elevations over 6 feet.

**Caution:** Potential Electrical Hazard

Secure work area to keep people out of area.
Regulate area with red “Danger Asbestos” tape and signs.
Seal windows, intakes, HVAC units, etc. (except plumbing vents) with poly.
Lay a poly drop sheet under the removal area.
Don respirator.
If safe to do so, wet the area of roofing to be removed.
If using power tools, put shaving cream along the cut-line. Cut through the shaving cream.
Scrape up roofing and debris and place in ACM disposal bag.
Lower bag to ground. Do not drop.
HEPA vacuum or wet wipe.
Do the required operation or maintenance.
Cleanup and teardown.
Remove ACM Floor Tile or Baseboard and Associated Mastics

Secure work area to keep people out of area.
Regulate area with red “Danger Asbestos” tape and signs.
If mastic is to be removed, protect walls, etc. with poly sheeting.
Don respirator and safety glasses.
Wet the tiles and/or baseboard to be removed with amended water.
Remove tiles and mastic using one of the methods described below.

Floor Tile Removal Methods

Flood Method
- Pour water over area to be abated.
- Cover area with a sheet of poly. Tape down edges.
- Let soak for 24 to 48 hours. Check for leaks on floor below abatement area.
- Remove tape and poly, lift loose tiles.

Wedge Method
- Wedge a flat, long, wide blade scraper (spatula) under tiles or baseboard and lift.
- Put tiles or baseboard in an ACM disposal bag.

Heat Gun Method
Note: Burn Hazard, Outgassing Hazard.
- Heat the tile or baseboard to soften the mastic.
- Slide scraper under the tile and lift.
- Put tiles or baseboard in an ACM disposal bag.

Dry Ice
Note: Frostbite Hazard, Oxygen Deficiency Hazard. Contact EH&S before using this method.
Put on thermal gloves.

Put the dry ice in a cloth (burlap) bag and crush the ice.

Lay the bag on the tile or push it up against the baseboard to be removed.

After a few minutes, move the bag to the next tile, etc., and use the wedge method to remove the first. Repeat as needed.

**Mastic Removal**

Apply the mastic remover to the area and let it soak until mastic is liquefied.

Wipe up the dissolved mastic and remover.

Check for leaks on floor below the cleaned work area.

Dispose of wipes, etc., as ACM waste.

Wash tools.

HEPA vacuum area

Cleanup and teardown
REMOVE ACM-BACKED VINYL SHEET FLOORING

Secure work area to keep people out of area.
Regulate area with red “Danger Asbestos” tape and signs.
Don respirator and protective clothing.
Wet area to be removed with amended water.
Cut perimeter of area to be removed.
Make parallel cuts 6” apart inside area to be removed.
Pull up corner of first strip.
Separate from backing
Wet along cuts and delaminations.
Repeat for next two strips.
Soak backing material and mastic with mastic remover.
Scrape up felt backing, wipe up mastic residues.
Put waste in ACM disposal bag.
HEPA vacuum area.
Repeat process on next sections until finished.
Let floor dry.
HEPA vacuum the whole work area.
Cleanup and teardown.
Remove Carpet Over ACM Flooring (Carpet Mastic Not ACM)

Secure work area to keep people out of area
Regulate area with red “Danger Asbestos” tape and signs.
Don respirator and protective clothing.
Pull up a corner or seam, or pierce the carpet
HEPA vacuum floor and back of carpet.
Remove carpeting in pieces, misting the back of the carpet as it is removed.
Mastic or felt residue still adhering to the floor may be removed with mastic remover.
Put carpet, wipes, etc., into ACM disposal bag.
Let substrate dry.
HEPA vacuum work area.
Cleanup and teardown.
REMOVE ACM CARPET MASTIC

Secure work area to keep people out of area.
Regulate area with red “Danger Asbestos” tape and signs.
Set up critical barriers.
Don respirator and protective clothing.
Pull or pry up carpet.
Mist with amended water or keep the nozzle of a HEPA vacuum at the separation point.
Soak exposed mastic with mastic remover and let soak in.
Wipe up mastic and remover. Dispose of wipes, carpet, etc., as ACM waste.
Wet wipe and HEPA vacuum the tools and work area.
Cleanup and teardown.
Preparation to Install a Partition Over ACM Flooring

Secure work area to keep people out of area.
Regulate area with red “Danger Asbestos” tape and signs.
Don respirator and protective clothing.
Using amended water, wet the flooring where the work is to be done.
Scrape down high spots.
Remove damaged flooring in work area. Fill low spots.
Do any necessary drilling through shaving cream.
HEPA vacuum the work area to pick up debris.
Install the base plate and anchoring fasteners.
Cleanup and teardown.
Special Hazards

The following all involve special hazards. **Review the work procedures with EH&S before starting the project.**

- Clean up debris in Elevator Mechanical Rooms
- Change elevator brake linings.
- Remove transite-lined lab fume hoods.
- Remove transite lab sinks.
- Remove ACM electrical wiring.
- Remove ACM cement roof or siding shingles.
- Remove ACM glazing or caulking.