Asbestos Management Program

Department of Environmental Health and Safety
Northern Illinois University
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## Review and Updates

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INTRODUCTION

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 that 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 sheeting 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 ACMs 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.

PURPOSE

The purpose of the Asbestos Management Program (AMP) is to prevent the risk of employee exposure to ACM during operations on campus. 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 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, 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 applicable rules and regulations as outlined by the Occupational Safety and Health Administration (OSHA), Environmental Protection Agency (EPA), Illinois Department of Public Health (IDPH) and the Illinois Department of Labor. These specifically are:

Occupational Safety and Health Administration, U.S. Department of Labor (OSHA)
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)
40 CFR 61 Subpart M National Emission Standards for Hazardous Air Pollutants (NESHAP)

U.S. Department of Transportation (USDOT)
49 CFR 171 Applicability, General Requirements and North American Shipments
49 CFR 172 Hazardous Materials

State of Illinois
77 Ill. Adm. Code 85 Illinois Department of Public Health
56 Ill. Adm. Code 350 Health and Safety
820 ILCS 219/1-925 Occupational Health & Safety Act

Industry Best Practice

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.

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.

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 American Industrial Hygiene Association (AIHA) accreditation and National Voluntary Laboratory Accreditation Program (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.
**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 (APC)** - The APC (EH&S staff member) administers all aspects of the AMP. The APC (and/or the Director of EH&S) is licensed by IDPH as an Asbestos Building Inspector, Asbestos Project Manager and Air Sampling Professional. The APC serves as the university representative 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.


**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.

**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 that 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.

**USDOT** – United States Department of Transportation

**USEPA** - 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 fiber per cubic centimeter (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 f/cc 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 f/cc 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 ACM, 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.

**IDPH** - Illinois Department of Public Health

**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 (Asbestos Hazard Emergency Response Act) and maintain 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** - ACM that is not surfacing or thermal system insulation, such as floor tile, ceiling tile, wire insulation, and asbestos cement products.

**Negative Exposure Assessment** - Employer demonstrates in accordance with OSHA regulations that employee exposure during an operation is expected to be consistently below the Permissible Exposure Limits (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.
OSHA - Occupational Safety and Health Administration, administered by the Illinois Department of Labor (IDOL).

PCM – Phase Contrast Microscopy. It is used to analyze air samples for fibers.

PLM – Polarized Light Microscopy. This is used to analyze bulk samples for fibers and determine asbestos type.

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.

Physician or other Licensed Health Care Provider (PLHCP) – means an individual who is legally permitted scope of practice (i.e., license, registration, or certification) allows him or her to independently provide, or be delegated the responsibility to provide, some or all of the health care services required by OSHA asbestos and respirator user medical surveillance.

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.

Repair - Returning damaged ACM to an undamaged condition or to an intact state 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.
**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 material** - means ACM 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).

**TEM** – Transmission Electron Microscopy. This may be used to determine type and quantity of asbestos fibers in both air and bulk samples.

**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.

### SCOPE

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

### RESPONSIBILITIES

#### Management Responsibilities

- Ensure respective operations are compliant with this program the AMP.
- Ensure notice of violations and/or program deficiencies are promptly addressed and mitigated. Immediately report potential fiber release episodes to the APC.
- Seek guidance from the APC as needed.

#### Foreman/Supervisor Responsibilities

- Ensure employees practice safe work procedures in accordance with their training, and use the proper equipment and controls.
- Ensure employees understand the requirements outlined in this program.
- Ensure employees attend training based upon their degree of potential exposure.
• Contact the APC for guidance in the event disturbance of PACMs is anticipated to facilitate operations.

• Immediately report potential fiber release episodes to the APC.

• Maintain the following records:
  - Employee asbestos training records.
    - IDPH- licensed workers;
    - Operations and maintenance trained workers;
    - Asbestos awareness trained workers.
  - Respirator fit tests;
  - Medical clearances for respirator use.
  - Hazard assessments issued by the EH&S Department for capital improvement projects.

• Ensure notice of violations and/or program deficiencies are promptly addressed and mitigated.

**Employee Responsibilities**

• Report any suspect materials to supervisor, management or the APC prior to disturbance.

• Report accidental disturbances to supervisor, management or the APC.

• Perform asbestos disturbance activities in a safe manner following work practices and procedures outlined in the AMP while wearing appropriate PPE as necessary for the type of job performed in accordance with level of training or licensing.

• Report an injury or illness to the supervisor, management or the APC.

**EH&S Department Responsibilities**

• Correspond with asbestos abatement contractors, environmental consultants, and other campus stakeholders (i.e. Facilities Management and Campus Services Residential Housing Facilities Management, Division of Information Technology, Accounting and Procurement Services) on operations that involve asbestos abatement project management. This involves but is not limited to:
  - Performing hazard assessments to facilitate capital improvement project and work requests.
  - Soliciting proposals and cost estimates for asbestos abatement and consulting services.
  - Engaging in fiscally responsible practices and oversight of contractor and consultant purchase orders.
  - Providing project management services during asbestos abatement projects.
Facilitate the quality-based selection process to retain qualified environmental consultants.

- Coordinate and contract industrial hygiene services to monitor asbestos abatement activities.
- Schedule, coordinate and provide asbestos training, fit tests and respiratory physical exams on an annual basis.
- Review the Asbestos Management Plan at minimum annually and revise as necessary.
- Provide technical assistance upon request.
- Serve as the University representative 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 asbestos project-related records and documentation (i.e. air monitoring results, building inspection reports, project reports, waste manifests, contractor proposals, project specifications, etc.).
- Provide foremen/supervisors with employee’s fit tests and medical clearance when completed.
- 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 as referenced in the NIU Contractor Safety Program on the EH&S website.
- Contractors and consultants are to provide EH&S Department with a final report in a timely manner.

**CAPITAL IMPROVEMENT PROJECT PROCESS**

The EH&S Departments performs hazard assessments to determine the potential impact to ACMs and PACMs in accordance with the capital improvement project process (i.e. initially-initiated projects, Capital Development Board (CDB) projects or energy performance projects). This involves collaborating with assigned project managers to evaluate the project scope of work, participating in weekly work request meetings, project meetings and walkthroughs, conducting site visits and building surveys and managing asbestos abatement projects when needed. Costs associated with such work are included in project budgets. Projects managers are required to submit abatement documentation upon project completion to the EH&S Department especially for abatement projects in which the EH&S Department may not directly manage (i.e. CDB and energy performance projects).
BUILDING INSPECTION PROCEDURES

The EH&S Department maintains a comprehensive inventory of asbestos building inspection records that identify type, quantity and location of identified ACMs and PACMs in campus buildings. Such records are referenced as part of the hazard assessment process as ACMS must be identified prior to any renovation or demolition project in accordance with EPA regulations. In the absence of available survey data or if survey data is inconclusive, the APC and/or an IDPH-licensed building inspector will collect samples of suspect ACMs for analysis at an accredited laboratory. Confirmatory samples of surfacing ACMs/PACMs will also be collected and analyzed to confirm asbestos content. Surveys are conducted according to applicable OSHA, EPA, and IDPH rules and regulations. Any material suspected to contain asbestos that has not previously been tested must be presumed to contain asbestos and managed accordingly. Survey and sampling results will serve as the basis for the development of the project scope of work and/or abatement method. No University property will be exempted from this requirement based on date of construction or renovation since asbestos is still used in various types of building construction.

Surveillance and Assessment

The APC will perform random and periodic surveillance to evaluate the condition of ACMs in university properties.

ACMs found to be in a "damaged" or "significantly damaged" condition will be designated as a regulated area and require an immediate abatement action. The APC will submit a work request to the Physical Plant work request office to facilitate the appropriate method of abatement. It is also the responsibility of all program stakeholders to report damaged ACMs, when discovered, to the work request office to facilitate the abatement process.

HAZARD COMMUNICATION

Notice to Building Occupants

Every effort will be made to notify building occupants who work in or adjacent to areas where asbestos abatement operations are scheduled. The notification shall provide information regarding the work to be performed and the measures employed to minimize the potential for fiber release. The EH&S Department will contact the building representative and the building representative can disseminate the information to the impacted occupants. This notice is also sent to the project manager so the project manager can advise contractors working under their respective purview.

Notification to Regulatory Agencies

Asbestos abatement contractors are required to notify the IEPA via mail 10-working days prior to removal of 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 (3) square or three (3) linear feet and 160 square feet, 260 linear feet, or 35 cubic feet. Copies of
notifications are maintained on file in the EH&S Department. A revised notification form will be issued to the regulatory agencies 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 PEL.

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

- Shall be demarcated in a manner to restrict persons from entering and protect from exposure to airborne asbestos;
- Shall have ‘Danger – Asbestos’ signs posted and associated ‘Danger- Asbestos' barrier tape erected to define the scope of the regulated area;
- Shall not allow employees to eat, drink, smoke, chew tobacco or gum, or apply cosmetics;
- Shall be supervised by a competent person.

Only personnel trained and medically qualified to don respiratory protection are authorized to enter a regulated area with the exception being first responders. First responders are authorized to enter to respond to emergency situations.

**Asbestos Signs and Labels**

Asbestos signs and labels include ‘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 mechanical and utility environments containing TSI or surfacing ACMs to inform staff who have access to these areas that such materials are present therein. Examples of signs used are as follows:
Danger-Asbestos Sign

![Danger-Asbestos Sign]

Caution-Asbestos Sign

![Caution-Asbestos Sign]
Asbestos – ‘Danger’ labels may also be affixed to TSI where feasible in lieu of ‘Caution--Asbestos’ signage as depicted in the following example:

**Danger-Asbestos Label**

Asbestos waste shall be properly labeled with a ‘Danger – Asbestos’ label, DOT Class 9 Special Waste label and generator tag.
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 an opaque bag or fiber drum. It must have the following information:

- Name of the building owner (Northern Illinois University);
- Name of the Department and Shop that removed the ACM, (i.e., Physical Plant, Carpenter Shop);
- Type of work (O&M)
- Name of the building from which the ACM was removed;
- Date the material was removed.
METHODS OF ABATEMENT

Trained and licensed personnel shall comply with project specifications and applicable OSHA, EPA and IDPH regulations during asbestos abatement operations. Trained Physical Plant staff shall also follow the Operations and Maintenance procedures listed in Appendix A for maintenance and repair operations in which the scope of work consists of abatement of no more than three (3) square or (3) 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 all of the following criteria:
  - The damage is localized;
  - The area of damage is less than 10% of the continuous area of ACM in a functional space;
  - The area of damage is less than 10 linear feet or 10 square feet; and
  - The volume of debris generated by the activity does not exceed filling one asbestos waste bag.

- **Encapsulation**
  Encapsulation (bridging/penetrating) is the application of a sealant to the ACM to prevent the release of asbestos fibers. Encapsulation may only be used if all of the following conditions are met:
  - The area is localized
  - The area of damage is less than 10% of the continuous area of ACM in a functional space; and
  - 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. Removal operations are typically performed to facilitate planned and scheduled renovation/demolition projects.
FIBER RELEASE EPISODE

Asbestos-related emergencies involve a release of asbestos-containing materials (ACMs) that presents a potential for occupant exposure and/or contamination of the building environment.

The Asbestos Program Coordinator and those members of the EH&S Department holding current IDPH asbestos worker or supervisor licenses are considered by OSHA as competent persons to assess and deal with an asbestos related emergency. Should none of these people be available, get the assistance of the Physical Plant Director and an asbestos licensed foreman to assist you.

In the event of a major release of asbestos through damage to ACMs, EH&S may be notified before or after the Physical Plant or Heating Plant.

Emergency Procedures

1. The Asbestos Program Coordinator or designated asbestos licensed member of EH&S Department gathers as much information from the initial information source as possible, in particular ascertaining the location of the asbestos problem.
2. EH&S designee confirms that the affected area has been isolated and secured.
3. EH&S designee investigates the scene, determining the type of suspected ACM, the extent of the damage and the potential for further damage to it or surrounding materials.
4. EH&S designee reviews building asbestos surveys to see if affected materials and those in the immediate area were tested and found positive for asbestos.
5. EH&S designee determines the likelihood and size of potential fiber release (Major Release, Significant Release, Minor Release, or Simple Repair).
6. EH&S designee then coordinates with Physical Plant and others if affected.
7. If necessary the EH&S designee will contact an abatement contractor and environmental consultant (both on open order) to estimate cost of clean-up and/or abatement and with approval engage contractors to attend to issue using NIU’s open orders for asbestos removal and environmental professional services.
8. EH&S designee coordinates and facilitates as needed to complete the project.
GENERAL HOUSEKEEPING PRACTICES

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 ACM flooring material.
- As a preventive measure, floor wax compounds shall be applied on a regular schedule especially in high traffic areas.
- 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.

Building fixtures (i.e. ceiling light fixtures, elevated surfaces, hard-to-reach areas, etc.) in areas where ACM TSI and surfacing materials are present should be cleaned and maintained on a regular basis.

WASTE DISPOSAL

Operations and Maintenance Operations

Asbestos-containing debris must be promptly cleaned up by licensed or O and M trained personnel and disposed in the proper manner. Staff shall use High Efficiency Particulate Air Filtration (HEPA) filtered vacuums and wet methods to clean up asbestos debris. Adequately wet debris shall be properly disposed in double-layered ACM disposal bags. Disposal bags shall be “goose-necked” and properly labeled for transport to the roll-off asbestos dumpster located on the west side of campus near the Human Resources/Document Services Building. The APC will submit necessary manifests for pickup and transport of the dumpster to an EPA-approved landfill.

Asbestos Abatement Projects

Asbestos waste generated during asbestos abatement projects shall be disposed of at an EPA-approved landfill as listed in the project notification. Abatement contractors are required to arrange for disposal and submit completed waste manifests to the APC upon receipt.
PERSONAL PROTECTIVE EQUIPMENT (PPE)

Respiratory Protection

Workers engaged in asbestos abatement operations are required to don respiratory protection when conducting abatement operations that fall under the following criteria:

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

Staff assigned to perform such operations are enrolled in the campus Respiratory Protection program. Please refer to this program located at the following link for specific requirements: [http://www.niu.edu/ehs/pdf/respiratory_prot_plan.pdf](http://www.niu.edu/ehs/pdf/respiratory_prot_plan.pdf). A hard copy of this program is also available in the Safety Resource kiosk located in the Physical Plant Materials Distribution Center.

The APC coordinates and schedules annual fit testing and physical exams for NIU employees enrolled in this program.

Protective Clothing

Licensed workers and/or O&M trained employees are required to don protective clothing consisting of disposable Tyvek or cloth suits, protective boots and gloves, safety glasses and other 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 three chambers including an attached equipment room, shower area, and clean room. The decon unit must be set up adjacent to and connected to the contained 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 who have the potential to come into contact and/or disturb ACMs. Those employees that perform a Class IV activity or have the potential to come into contact with but not disturb asbestos, are required to attend an annual two-hour asbestos awareness class. Those that perform Class III operations and maintenance (O&M) where ACM may be disturbed, must be repaired or cleaned up are required to attend an annual four-hour refresher. Those employees that perform Class I and II activities are required to obtain and maintain an asbestos abatement worker or supervisor license issued by IDPH. Licensed workers and supervisors are required to attend an annual 8-hour contractor/supervisor refresher courses.

Licensing Requirements

Individuals who perform any Class I and II activity 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 an asbestos project supervisor. Projects requiring that a work plan or project specification be developed shall be designed by a licensed asbestos project designer. Such projects will be monitored by NIU staff licensed as an asbestos project manager and air sampling professional. Air and/or bulk samples shall be collected by a licensed air sampling professional.
MEDICAL SURVEILLANCE

The EH&S Department maintains a Medical Surveillance Program in conjunction with an occupational health provider. 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 required to wear respiratory protection must be physically able to perform the work while donned in the appropriate type of respiratory protection. This determination shall be made under the supervision of a physician or other licensed health care professional (PLHCP).

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

Assigned personnel receive a physical exam and pulmonary function test annually and a chest X-ray on the basis provided in OSHA regulations or more often as recommended by the PLHCP. Personnel also receive a physical exam, pulmonary function test and chest X-ray upon separation from NIU.

Records of medical clearance to don respiratory protection are maintained by the employee’s foreman or supervisor. Copies are provided to the affected employee. Medical records are confidential and can only be accessed by the employee or the employee’s physician with the employee’s consent.

AIR SAMPLING PROGRAM

Licensed air sampling professionals are retained to perform air sampling during asbestos abatement projects to ensure engineering controls are successful in minimizing the release of asbestos airborne fiber concentrations. Air sampling includes area, personal and clearance testing.

Methods of sampling include the NIOSH Method 7400, Phase Contrast Microscopy (PCM) and NIOSH Method 7402, Transmission Electron Microscopy (TEM). The method used depends upon the project scope of work.

Negative exposure assessments are conducted to ensure employees are not exposed to asbestos at concentrations greater than the PEL. 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, to determine the appropriate type of respiratory protection.

Personal Air Sampling

Personal air sampling shall be conducted on workers performing various abatement operations in accordance with applicable OSHA requirements. Results are used in the development of negative exposure assessments. The OSHA 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). The Excursion Limit (EL) is 1.0 f/cc in a 30-minute period. 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 Sampling

Area air sampling shall be conducted as specified by applicable federal and state regulations to verify the integrity of the regulated work area and to ensure there are no asbestos fibers migrating from the containment. The competent person managing the project is responsible to investigate and resolve any deficiencies in the integrity of the regulated work area in the event sample results exceed the OSHA PEL of 0.1 f/cc.

Clearance Air Sampling

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, results of personal air sampling conducted during the project will be considered sufficient for use as clearance results, if the following conditions are met:

- The work activity was not conducted utilizing a negative pressure containment;
- The sample result indicates a fiber concentration less than the regulated clearance level for re-occupancy of 0.01 f/cc; and
- The sample was run for the duration of work including cleanup.

The EPA and 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. If TEM analysis is performed for clearance purposes, the EPA and IDPH clearance values should be less than 70 structures per millimeter squared. (s/mm²).
LABORATORY ANALYSIS PROGRAM

Licensed staff that collect samples (air/bulk) submit samples to a laboratory that is accredited by the National Voluntary Laboratory Accreditation Program (NVLAP) supported by the National Institute of Standards and Testing (NIST). 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 edition of Appendix A in 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. (Generally speaking, bulk samples of floor tile will be analyzed by TEM in accordance with IDPH recommended guidelines).

Materials Containing Trace Amounts of Asbestos

A material is considered an ACM when it contains more than one percent asbestos. However, materials containing less than or equal to one (1) percent (trace amounts) are still regulated by OSHA given there is no safe level of exposure to asbestos. Therefore, licensed asbestos or O&M trained workers are still required to regulate the area, don appropriate PPE and implement safe practices when disturbing materials that contain trace amounts of asbestos. Please contact the APC for additional information as needed.
APPENDIX A: Operations and Maintenance Procedures
O&M WORK PRACTICES AND PROCEDURES

Operations and maintenance (O&M) OSHA Class III work that may disturb ACM requires the use of special techniques for the protection of the worker and those occupants in the immediate area. A disruption of ACM is any activity that causes damage to the ACM resulting in the generation of visible dust and debris. 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. Any work involving clean up, repair, enclosure or encapsulation of ACM must be done by an O&M-trained worker.

Class III involves use of:

- Asbestos O&M training;
- Secured and regulated work areas;
- Drop-cloths and plastic barriers;
- PPE (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 except where its use could result in electrical hazards, equipment malfunction, icing or slip hazards;
- Air sampling if necessary;
- Lockdown encapsulants if needed; and
- Prompt cleanup and disposal of existing waste in leak-tight ACM labeled bags.
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 Asbestos-Danger barrier tape and signs. 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. Follow these steps upon completion of 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 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 APC 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 APC 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

ACM fireproofing and acoustical plaster are friable and require additional planning/coordination to minimize potential fiber release during a planned O&M operation. Therefore, please consult with APC before disturbing these ACMs.

Special Hazards

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

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

HEPA vacuum under work area.

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 as well as drapery rods, 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. (Another HEPA vacuum can serve as the negative air unit.)

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 in containment.

Wet down the bag or filters with amended water.

Remove dirty filters or bag and place in an ACM disposal bag. If too large for an ACM disposal bag, dampen dirty filters or bag and seal in one layer of poly, then in the second.

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.

Make sure all appropriate labels are applied and visible—required are the Danger Asbestos, generator tag and DOT Class 9 Miscellaneous label.

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.
HEPA vacuum under work area.
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.
HEPA vacuum under work area.
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.

HEPA vacuum under work area.

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.
HEPA vacuum under work area.
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.
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 $\frac{1}{2}$” 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.
HEPA vacuum under work area.
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).
HEPA vacuum under work area.
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.
HEPA vacuum under work area.
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-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 and seal. Repeat with second sheet of poly.
Label properly for disposal.
HEPA vacuum the poly drop sheet.
Cleanup and teardown.
REMOVE OR REPLACE HARDWARE ON 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 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.
HEPA vacuum under work area.
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 and 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, misting with amended water or keeping the nozzle of a HEPA vacuum at the separation point as work progresses.
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.
Procedure 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.