



**THE UNIVERSITY OF NORTH CAROLINA AT CHAPEL HILL
ENVIRONMENT, HEALTH AND SAFETY
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Chapel Hill, North Carolina 27599
CB#1650**

**ASBESTOS CONTROL PROGRAM
REVISION TWO
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**UNC-CHAPEL HILL
ASBESTOS CONTROL PROGRAM**

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I. INTRODUCTION

The Asbestos Control Program is a set of practices and procedures applied to building cleaning, maintenance, construction, renovation and general operation in order to maintain the building. The Asbestos Control Program applies to all UNC construction and maintenance personnel including Architectural and Engineering Services, Facilities Planning, Construction Services and Energy Services. The goal at UNC is to: 1) manage the asbestos containing materials (ACM) in UNC buildings to ensure that exposures to personnel and the environment are minimized and are below the OSHA permissible exposure limit (PEL); 2) ensure that all removal and disposal of ACM complies with all local, state and federal regulations; and, 3) maintain records of surveys, monitoring activities, maintenance activities involving ACM, and personnel exposure. This program is administered by the Department of Environment, Health and Safety. The following individuals oversee the program:

- Industrial Hygiene Support- Environment, Health and Safety
- Asbestos Supervisor for Facilities- Supervisor of the Insulation Shop for Maintenance
- Asbestos Supervisor for Housing Support-Maintenance Shop

II. DEFINITIONS AND ACRONYMS

- A. ACM** - Asbestos Containing Materials means any material or product, which contains greater than 1% asbestos.
- B. ACBM** - Asbestos Containing Building Material meaning any surfacing ACM, thermal system insulation ACM, or miscellaneous ACM that is found in or on interior structural members or other parts of a building.
- C. AHERA** - Asbestos Hazard Emergency Response Act
- D. Asbestos Supervisor** - A person who is a “competent person” as defined in 29 CFR 1926.1101(b) and adopted by 13 NCAC 7F 0201 and amendments or recodifications as adopted by the North Carolina Department of Labor and who is an “on-site representative” as defined in 40 CFR part 61.145 as adopted in Rule .0609 of NC-DHHS regulation and who performs the duties specified therein.
- E. Class I Asbestos Work** – Activities involving the removal of thermal system insulation (TSI) and surfacing ACM and presumed ACM.
- F. Class II Asbestos Work** – Activities involving the removal of ACM that is not TSI or surfacing material. This includes, but is not limited to, the removal asbestos containing wallboard, floor tile and sheeting, roofing and siding shingles, and construction mastics.
- G. Class III Asbestos Work** – Repair and maintenance operations, where “ACM”, including TSI and surfacing ACM and PACM, is likely to be disturbed.
- H. Class IV Asbestos Work** – Maintenance and custodial activities during which employees contact but do not disturb ACM or PACM and activities to cleanup dust, waste and debris resulting from Class I, II and III activities.

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- I. Disturbance-** activities that disrupt the matrix of ACM or PACM, crumble or pulverized ACM or PACM, or generate visible debris from ACM or PACM. In no event shall the amount of ACM or PACM so disturbed exceed that which can be contained in one glove bag or waste bag that shall not exceed 60 inches in length and width.
- J. Encapsulation** - The treatment of ACBM with a material that surrounds or embeds asbestos fibers in an adhesive matrix to prevent the release of fibers.
- K. Enclosure** - An airtight, impermeable, permanent barrier around ACBM to prevent the release of asbestos fibers into the air.
- L. Eight (8) Hour Time Weighted Average Time Weighted Average (TWA)** - The employee's average exposure based on an eight (8) hour work shift. Sampling should be for a minimum of six (6) hours. All substances not designated by a "c" are considered an eight (8) hour TWA, Excursion, or Short Term Exposure Level (STEL). For multiple samples collected during the shift, the TWA is calculated by summing each exposure multiplied by the time interval sampled, and dividing by the total time sampled.
- a. Where:
- $$\frac{(C1 \times T1)+(C2 \times T2)....(Cn \times Tn)}{T1+T2....Tn} = \text{TWA}$$
- C = measured concentration for time interval T
T = time interval in minutes
- M. Excursion Limit** - Airborne fiber concentrations of asbestos shall not exceed 1.0 f/cc of air as averaged over a 30 minute sampling period. This samples should be collected during anticipated peak exposure.
- N. Friable ACM** - Material that when dry can be crumbled, crushed, pulverized or reduced to powder by hand pressure and includes damaged non-friable materials. OSHA refers to as material that is nonintact or no longer intact.
- O. HEPA** - High efficiency particulate air filter that is capable of filtering 99.97% of the particulates of 0.3 µm in diameter from the air.
- P. Intact-** OSHA term that 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.
- Q. Negative Exposure Assessment (NEA)** - Demonstration by the employer that the employee exposures will be below the PEL as documented by the objective data, historical data, or current monitoring data.
- R. Major Fiber Release Episode** - The falling or dislodging of friable asbestos involving the disturbance of more than 3 square or linear feet.
- S. Minor Fiber Release Episode** - The falling or dislodging of friable asbestos involving the disturbance of less than 3 square or linear feet.
- T. Miscellaneous Material** - Interior building material on structural components, structural members, or fixtures, such as flooring materials, ceiling tiles and does not include surfacing or thermal system insulation.
- U. Nonfriable-** material when dry may not be crumbled, pulverized or reduced to powder by hand pressure. Refer to the definition of intact.
- V. Removal** - All operations where ACM and/or PACM is taken out or stripped from structures or substrates, and include demolition operations.

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- W. Repair** - Overhauling, rebuilding, reconstructing, or reconditioning of structures or substrates, including encapsulation or other repair of ACM or PACM attached to structures or substrates.
- X. Response Action** - A method including removal, enclosure, encapsulation, repair, Asbestos O&M that protects human health and the environment from friable ACBM.
- Y. Operations & Maintenance (O&M)** – Asbestos Operations and Maintenance: Specific procedures and practices developed for the interim control of asbestos-containing materials in buildings until it is removed.
- Z. PEL** - Permissible exposure limit of <0.1 f/cc over an 8 hour time weighted average.
- AA. Regulated Area** - means: an area established by the employer to demarcate areas where Class I, II, and III asbestos work is conducted, and any adjoining area where debris and waste from such asbestos work accumulate; and a work area within which airborne concentrations of asbestos, exceed or there is a reasonable possibility they may exceed the permissible exposure limit. Requirements for regulated areas are set out in paragraph (e) of this section.
- BB. Regulated Asbestos-Containing Material (RACM)** - Material that is (a) friable, (b) Category I nonfriable ACM that has become friable, (c) Category I non-friable ACM that will be or has been subjected to sanding, grinding, cutting or abrading, or (d) Category II nonfriable ACM that has a high probability of becoming or has become crumbled, pulverized, or reduced to powder by the forces expected to act on the material in the course of the demolition or renovation operations.
- CC. Small Projects** – For purposes of this Policy it is abatement activities performed by Class I and II supervisors within one project over one eight hour shift that shall not exceed the abatement or cleanup of more than 25 linear feet of TSI, a 10 square foot area of non-intact (friable) material. Removing more than these amounts would require either accreditation and/or full decontamination units. For Friable Class III work within one project shall not exceed the amount of material collected in one waste bag or glovebag 60” x 60” in size.

III. REGULATORY AGENCIES

A. OSHA

OSHA regulates occupational exposure to employees who are involved in the removal of ACM or whose jobs require them to potentially disturb or otherwise are exposed to ACM (*29 CFR 1926.1101, Construction Standard; and 29 CFR 1910.1001, General Industry Standard*). The standard establishes exposure limits, and requires exposure monitoring, medical surveillance, recordkeeping, provisions for regulated areas, and communication of hazards. The permissible exposure limits (PEL) established by OSHA are: 1) 0.1 fibers per cubic centimeter (f/cc) for an 8 hour time-weighted average limit (TWA);

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2) 1.0 f/cc excursion limit (EL) as averaged over a sampling period of 30 minutes.

B. EPA

EPA regulations include the following:

- *NESHAPS (40 CFR Part 61, subpart M, National Emission Standards for Hazardous Air Pollutants)* regulation that require the owner or operator, prior to commencement, to thoroughly inspect the affected facility or part of the facility where the demolition or renovation operation will occur for the presence of asbestos, including Category I and Category II nonfriable ACM. The requirements apply to each owner or operator of a demolition or renovation activity, including the removal of RACM as follows At least 80 linear meters (260 linear feet) on pipes or at least 15 square meters (160 square feet) least 1 cubic meter (35 cubic feet) off facility components where the length or area could not be measured previously. This regulation includes notification requirements, procedures for emission control, and processing, handling and disposal of asbestos and asbestos-containing waste.
- *AHERA (Title II, Toxic Substance Control Act, The Asbestos Hazard Emergency Response Act)* regulates asbestos containing materials in public and private schools grades Kindergarten thru 12th grade. The main purpose was to Identify, assess and control asbestos. OSHA and NESHAP refer to this regulation for inspection compliance
- *ASHARA, (40 CFR Part 763, Appendix C to Subpart E of Part 763-Model Accreditation Plan, Asbestos School Hazard Abatement Reauthorization Act)*, required accreditation of personnel working on asbestos activities in public and commercial buildings.

C. North Carolina Department of Human and Health Services

Asbestos Hazard Management Program (State Rules) (10A NC Administrative Code, Chapter 41C, section .0600 and 06118) administered by the Health Hazard Control Unit, NC-DHHS-Department of Public Health, regulates public exposure and accredits personnel engaged in asbestos control activities such as asbestos removal workers, supervisors, inspectors, management planners, removal project designers, and air monitors on NESHAP size projects.

D. State Construction Office:

The NC State Construction Office has written guideline criteria for asbestos abatement for state owned buildings.

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IV. PERSONNEL ASSOCIATED WITH THE PROGRAM:

Point of Contacts

EHS Technical Support Representative:	Janet Phillips; 962-5720
Facilities Services Training Coordinator	Ray Doyle; 962-4440
Asbestos Supervisor for Facilities:	Chip Fehr; 962-1405
Asbestos Supervisor for Housing Support	Mike Holloway; 883-7564

Shop with the ability to perform Class I, II or III Work Activities

- In the Facilities Services Department, Insulation Shop 512
- In Housing Support, Maintenance

In the event the scope of work exceeds the abatement or cleanup of more than 25 linear feet of TSI or 10 square feet of non-intact friable material, an outside licensed asbestos abatement contractor shall be hired to perform the work.

V. COMMUNICATION OF HAZARD:

According to OSHA 29 CFR 1926.1101, communication of hazards associated with the ACM in buildings on UNC-Chapel Hill Campus shall be the responsibility of the following:

- Prior to releasing any work activity that may impact ACM, the UNC employee (such as a Facilities Project Manager, Facilities Architect, Housing Support Project Manager, etc.) responsible for contracting the work shall provide the contractor with a Contractor Notification Form (*See Appendix A*). This form must be completed and signed by the contractor acknowledging the presence of ACM within the specified building.
- A statement shall be provided to building occupants including facility and staff through the support of Information Technology Services (ITS) in the form of an email explaining the management of ACM on UNC's campus. This statement shall be distributed annually. (See Appendix B-1 and B-2 Building Occupant Notification)
- Housing Support shall require the Resident Assistants to inform students residing in the dormitories of the presence of ACM during the fall orientation each year. (See Appendix B-3)

With the exception of buildings under construction, each responsible entity shall submit a copy of the notification or documentation of the notification sent to the building occupants and/or employees on an annual basis to the EHS representative.

VI. TRAINING

In accordance with OSHA 29 CFR 1926.1101, new custodial and maintenance employees employed by UNC must receive Two Hour Awareness training within 90 days of their employment start date and annually thereafter. Questions or concerns should be directed to the EHS representative or the Facilities Services Training Coordinator.

A. Class IV Worker Awareness Training: OSHA Construction Standard 1926.1101 requires two hour annual awareness training for all employees that perform Class IV asbestos work. Class IV asbestos work includes maintenance and custodial activities during which employees contact but do not disturb ACM or PACM. The supervisors are responsible for ensuring that new hires are scheduled for the initial course and annually thereafter. Class IV work includes the potential for contacting ACM without creating a disturbance.

1. UNC Environment, Health and Safety Office (EHS) conducts the #4509-Annual Renewal Awareness Course every third Wednesday of each month for Trades Workers and every third Thursday for Housekeeping employees.
2. The supervisors of construction, maintenance and housekeeping for Facilities Services and Housing Support are responsible for ensuring that new hires are scheduled within ninety days for the initial course and annually thereafter.
3. The Asbestos Awareness Training Course includes the following topics:
 - Asbestos forms and uses
 - Health effects from asbestos exposure
 - Examples of materials located on campus
 - Hazard communication - training and signs / label requirements
 - How to recognize friable asbestos
 - Recognizing damage and deterioration of ACM
 - Precautions to prevent or minimize personnel exposure
 - Housekeeping requirements
 - Floor care

Class IV employees (maintenance and custodial staff members) may contact ACM during routine cleaning or maintenance activities provided the activity does not create a disturbance of the ACM. Any suspect materials identified during the activity (excluding fiberglass, wood, metal, kiln brick, cement, concrete, pressed wood, concrete masonry unit (CMU), rubber or glass with no finished coatings) shall be treated as ACM until sampling data can be provided. If the suspect material is damaged and

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delaminating from the substrate, isolate the area and contact your supervisor and/or EHS at 962-5507. If the event occurs after normal business hours, the employee shall report to their supervisor. The 3rd shift supervisor shall notify the Assistant Director for Housekeeping on the night shift.

B. Class III Worker Training: Employees engaged in Class III asbestos work including repair and routine maintenance operations, where "ACM", (including roofing, flooring, walls, ceiling tiles, pipe insulation and surfacing material), can be disturbed but shall not exceed the amount that can be contained in one glovebag or one waste bag (60" X 60" in size) in one eight hour shift.

These employees receive an initial 16 hour training provided by the North Carolina Occupational Safety and Health Educational Resource Center and attend an annual one day refresher each year. The class covers the following material:

- History, Types and Uses of Asbestos
- Health Hazards of Asbestos
- Medical Surveillance
- OSHA, EPA and State Regulations
- Other Safety and Health Hazards
- Respiratory Protection
- Respiratory Protection / Fit Testing
- Job Specific Duties
- Control Measures and Work Practices
- Cleanup of small amounts of ACM

C. Class I and II Worker Training: Class I and II Worker Training includes the removal of thermal system insulation (TSI), surfacing material, presumed asbestos containing material (PACM) and all other materials considered "non-intact". Friable or non-intact refers to an asbestos containing material (ACM) that has been crumbled, pulverized or otherwise deteriorated so that the asbestos is no longer likely to be bound with its matrix. These employees shall receive an initial forty hour Supervisor Training Course provided by an accredited training facility and attend an annual refresher each year. The class covers the following material:

- History, Types and Use of Asbestos
- Health Hazards of Asbestos
- Medical Surveillance
- OSHA, EPA and State Regulations
- Other Safety and Health Hazards
- Respiratory Protection
- Respiratory Protection / Fit Testing

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- Glove Bag Demonstration
- Use of Glove Bags / Cleaning Respirators
- Control Measures and Work Practices Procedures
- Personal Hygiene
- Air Monitoring

The abatement activities performed by Class I and II supervisors within one project shall not exceed the abatement or cleanup of more than 25 linear feet of TSI, or a 10 square foot area of friable or non-intact material for the purposes of this ACP. The amount of floor tile and mastic abatement is not restricted provided the material is performed utilizing non-friable or intact removal techniques. (Removing more than these amounts would require either state accreditation and/or full decontamination units.)

D. Training Records: Asbestos training records are maintained by EHS and by the Facilities Services Training Office. EHS maintains the training records within a computerized program (HASMIS). HASMIS is a record keeping program for employee training and medical evaluation requirements. Training expiration dates are monitored by the Facilities Services Training Coordinator, who may initiate emails or other reminder communications, but record retention is maintained by the EHS and the HASMIS system.

E. Departmental Responsibilities of the OSHA Class I-III:

The Maintenance Group performing abatement activities within the Class I, II and III categories include:

- In the Facilities Services Department, the Insulation Shop (512 Supervisor of the Facilities Services Insulation Shop (512) will operate as Asbestos Supervisor for the Facilities Services and Mike Holloway, Maintenance Employee, will operate as the Asbestos Supervisor for the Housing Support Services.

NOTE: Work that involves the abatement or cleanup of more than 25 linear feet of TSI (specified in OSHA for projects without an NEA), more than a 10 square foot area of surfacing material shall be sub-contracted to a pre-approved list of Asbestos Abatement Contractors through Facilities Services. These contractors will be on-call 24 hours a day seven days a week. Intact or nonfriable flooring and mastic abatement work can be performed by the 512 Insulation shop or Housing Support Shop as long as work can be completed within a two (2) day period with no more than two (2) workers.

VII. MEDICAL SURVEILLANCE RECORDS

Asbestos operations and maintenance personnel (Class III workers) and Class I

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and II workers and the EHS Industrial Hygienist are enrolled in the asbestos medical program as required by OSHA 29 CFR 1926.1101. Annual medical examinations are performed at the University Employee Occupational Health Clinic (UEOHC). The program includes a medical and work history with special emphasis directed to the pulmonary, cardiovascular, and gastrointestinal systems. Medical surveillance records are maintained as confidential personal information and are not released without written consent by the employee. Expiration dates and appointment scheduling are tracked by the HAZMIS program (EHS @ 962-5507) and UEOHC.

**VIII. DUTIES OF THE FACILITIES SERVICES TRAINING
COORDINATOR AND HUMAN RESOURCE MANAGER FOR
ENERGY SERVICES**

- A. Ensure that employees designated to perform Class I and II attend the appropriate initial and annual refresher course AHERA Supervisor or specific course required to perform specific Class II or Class III work.
- B. Ensure that new employees within the Building Services Department are scheduled to attend the 16 Hour Asbestos Operations and Maintenance Course as a class becomes available, but prior to performing any ACM activities.
- C. Ensure that employees designated as Class III employees attend the Asbestos Operations and Maintenance Refresher Course each year.
- D. Ensure that new hires designated as Class IV employees within the Facilities Services Department, the Housekeeping Services Department and Energy Services attend the Initial Asbestos Awareness Course within 90 days of being hired.
- E. Ensure that Class IV employees within the Facilities Services Department, the Housekeeping Services Department and Energy Services attend the annual Asbestos Awareness Refresher Course.

**IX. DUTIES OF A&E SERVICES DEPARTMENT INCLUDING
ENGINEERING SECTION, ARCHITECTURAL SECTION AND WORK
MANAGEMENT AND HOUSING MAINTENANCE**

The facility engineer, architect or estimator shall research whether the building materials that will be impacted by any construction project that contains asbestos. If ACM will be impacted by the renovation/work activity, the engineer, architect or estimator will conduct one of the following:

- A. A&E Services Department will be responsible for determining if scheduled projects can be performed by in-house personnel or contracted to an outside asbestos abatement contractor.

If the work is contracted to an outside asbestos abatement contractor, the Project Manager will be responsible for managing the project. The Project

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Manager shall provide EHS with all inspection data, a copy of the abatement project design, the name and contact of the air monitoring firm and the projected start/completion dates for the project. Upon project completion, the Project Manager shall forward a copy of the post documentation to the EHS Representative. The documentation shall include the following:

Prework

- Abatement Project Design/Specification (required for projects greater than 1500 lineal feet, 3000 square feet, and 356 cubic feet).
- Name and Contact of the air monitor
- Projected start and completion dates
- Name of abatement contractor firm and supervisor

Postwork

- A brief description of the abatement activity performed including the type of material, quantity and location
- Date of the abatement activity
- Name of the abatement contractor
- A copy of the closeout document from the abatement contractor
- Name of the air monitor firm (if required) including the air sampling documentation and report summary

B. If A&E Services Department determines the project can be performed by in-house personnel, the Project Manager will be responsible for managing the project. The Project Manager shall provide EHS with the projected start/completion dates for the project. The Project Manager or the Asbestos Supervisor shall forward a copy of the documentation to EHS. The documentation shall include the form located in Appendix C-Asbestos O&M Activity Form. The following summarizes the information required on the form:

- A brief description of the abatement activity performed including the type of material, quantity and location
- Date of the abatement activity
- Name of the employees performing the abatement activities

C. Inform the Building Administrator (if available) or a building representative of the corrective action implemented upon project completion.

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X. DUTIES OF CONSTRUCTION MANAGERS AND PROJECT MANAGERS

- A. Construction, demolition and renovation projects shall include an asbestos inspection to assess the presence of ACM and the potential for disturbance during the work phase of the project.
- B. The asbestos inspection report and subsequent project design specifications shall be submitted to EHS representative for review prior to bidding the project. The submittal shall include review of project descriptions and/or drawings submitted to EHS from Facilities Services Architectural and Engineering offices.
- C. Renovation plans can originate from Architectural and Engineering Services or Facilities Planning.
- D. The Project Designer or facilitator of the project shall provide EHS with a copy of the asbestos inspection report, the project design specification and the air monitoring plan prior to the start of the project.
- E. If the project occurs in a building containing ACM, but does not disturb the ACM, the Construction Manager or Project Manager will inform the contractor of the hazards associated with asbestos exposure and request the outside contractor to complete the form located in Attachment II. The notification should precede the start of the project. The contractor is responsible for informing his/her employees as well as any subcontractor and ensures that all applicable regulatory requirements are met.

XI. DUTIES OF THE SHOP SUPERVISORS WITHIN THE BUILDING SERVICES DEPARTMENT, HOUSING MAINTENANCE AND ENERGY SERVICES

- A. If the A&E Services Department is not involved with the project, the shop supervisor shall research the building materials that will be impacted by the work order to determine the presence of asbestos and amend the work order accordingly. If no information is available contact EHS to collect samples of the suspect materials if no information is available. The shop supervisor will not allow any employee who has not received the required training to perform any tasks or activities associated with the disturbance of ACM.
- B. Notify an Asbestos Supervisor if the abatement activity can be performed using in-house personnel. If in-house personnel are unable to perform the abatement activity, the work shall be contracted to an outside asbestos abatement contractor. The abatement activity shall be documented using the form located in Appendix C-Asbestos O&M Activity Form.
- C. In the event of an emergency or when a work order is not issued within a timely manner, the supervisor shall require the employee to assume the material as ACM unless it is documented as a non-asbestos containing material or as one of the following **non-suspect materials**: glass, metals, kiln brick, cement, fiberglass, concrete, pressed wood, concrete masonry units (CMU unpainted), or rubber.

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- D. In the event of an emergency, contact the Asbestos Supervisor to determine the feasibility for completing the work using in-house personnel or in hiring an outside asbestos abatement contractor to perform the work. The abatement activity shall be documented using the form located in Appendix C-Asbestos O&M Activity Form.
- E. Recordkeeping Requirements of the Asbestos Supervisor:
 - The employees' training records
 - The employees' medical documentation
 - The employees' respiratory fit tests
 - A copy of the work orders
 - A copy of the written report summary for emergency incident.
 - Waste disposal records

XII. DUTIES OF THE SUPERVISORS WITHIN THE HOUSEKEEPING SERVICES DEPARTMENT

- A. The supervisors will be responsible for recognizing potential asbestos hazards and reporting the hazards to the Asbestos Supervisor or EHS representative.
- B. Each supervisor shall ensure that no buffers exceeding 300 RPM are used on asbestos containing floor tiles.
- C. In the event of an emergency where building materials become damaged, the supervisor shall require the employee to assume the material as ACM unless it is documented as a non-asbestos containing material or as one of the following **non-suspect materials**: glass, metals, kiln brick, cement, fiberglass, concrete, pressed wood, concrete masonry units (CMU unpainted), or rubber. The employees shall perform the following:
 - Isolate the area
 - If feasible, place a sign directly outside of the isolated area with similar terminology, "Danger-Asbestos Hazard, Do Not Enter"
 - Do not perform any cleanup activities
 - Call the Zone Supervisor or EHS

XIII. DUTIES OF THE EHS INDUSTRIAL HYGIENIST

The Industrial Hygienist shall provide support to the Asbestos Control Program by performing the following tasks:

- A. The Industrial Hygienist shall conduct the Asbestos Awareness Training, both initial and refresher courses, under the direction of the Facilities Services Coordinator.
- B. The Industrial Hygienist shall conduct the Asbestos Operations and Maintenance Refresher Training, under the direction of the Facilities Services Coordinator.

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- C. The Industrial Hygienist is responsible for updating the training courses in order to disseminate updated, accurate information.
- D. The Industrial Hygienist is responsible for ensuring that the employees attending the courses are entered into HASMIS annually.
- E. The Industrial Hygienist shall conduct inspections upon request to determine the presence of ACM prior to the disturbance of the materials. The inspection information shall be provided to the authorized individual requesting the information within a timeframe established between EHS and the request.
- F. Depending upon the condition of the material and the complexity of the project, the EHS Industrial Hygienist shall determine which response option to utilize to control or eliminate the potential hazards. The control options including the following:
 - Removal
 - Encapsulation
 - Enclosure
 - Repair
 - Maintain under the Asbestos Operations and Maintenance Program
- G. The Industrial Hygienist shall update the Asbestos Database with the inspection information as required. The online database shall be updated monthly.
- H. The Industrial Hygienist shall conduct OSHA personnel monitoring of projects involving the disturbance of ACM. The Industrial Hygienist shall routinely inspect asbestos abatement activities being performed on campus by the various shops and document the site inspections. The Industrial Hygienist shall document each monitoring incident and establish the time weighted average for each incident and update EHS's Monitoring Database. A negative exposure assessment shall be maintained for each type of abatement activity on an annual basis.
- I. The Industrial Hygienist shall annually review the Asbestos Control Program and incorporate any changes or additions to the program.
- J. The Industrial Hygienist shall respond to all calls or complaints concerning asbestos containing materials. All complaints shall be documented in writing and the measures taken to correct the problem.

XIV. DUTIES OF THE ASBESTOS SUPERVISORS

- A. Upon determination of the condition of the ACM material and the complexity of the project and the EHS Industrial Hygienist have determined which response option to utilize to control or eliminate the potential hazards. The control options including the following:
 - Removal

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- Encapsulation
- Enclosure
- Repair
- Maintain under the Asbestos Operations and Maintenance Program

The supervisor shall ensure that trained competent personnel are assigned to the project.

- B.** Coordinate with the EHS Representative concerning air monitoring requirements.
- C.** The supervisors will be responsible for ensuring that the asbestos waste is properly packaged, labeled and transported to the storage facility located at the Giles Horney Complex. Coordinate with the Asbestos Supervisor for Facilities Services. Documentation relating to the generated waste shall be retained by the Asbestos Supervisor for Facilities.
- D.** Regulatory submissions are limited to the quarterly assessment of fees for waste generation of abatement activities less than 10 square feet or 25 linear feet. This also applies to unspecified amounts of non-friable floor tile. The Asbestos Supervisor for Facilities Services and/or the Asbestos Supervisor for Housing Support shall submit these reports to the North Carolina Department of Health Hazard Control Unit.
- E.** Maintain the equipment used to perform minor abatement activities including HEPA vacuums, filters for the vacuums, surfactants, adhesive removal agents, glovebags, duct tape, polyethylene sheeting (6 mil), heat-resistant gloves, and all other miscellaneous tools.
- F.** Notification of Emergency Abatement Projects:
1. Contact the EHS representative (during normal business hours Monday through Friday) immediately with the reported incident and isolation of the area. Incidences that would be considered “emergency” would include the falling or dislodging of friable asbestos involving the disturbance of any damaged or significantly damaged friable ACM. If feasible, place a sign directly outside of the isolated area with similar terminology, “Danger-Asbestos Hazard, Do Not Enter”. If the material is determined to contain asbestos, EHS and/or the Asbestos Supervisor will implement the necessary corrective measure to control or eliminate the hazard.
 2. If the incident occurs after hours, contact the Public Safety Department or dial 911. The call will be forwarded to the EHS Campus Fire Marshall. The Campus Fire Marshall and/or an EHS responder will implement the necessary corrective action(s) to control or eliminate the hazard. EHS will provide a written

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report summary as outlined in Appendix C within 24 hours of the incident. This report will be copied to the Asbestos Supervisor of Facilities Services or Housing Support.

3. EHS will inform the Building Administrator (if available) or a building representative of the incident and the corrective measures implemented to control or eliminate the hazard.
4. Under some circumstances buildings may be damaged (high winds, tornado's, hurricanes, fires, explosions) which may require immediate actions for cleanup. Under these circumstances if it is known that no ACM has been disturbed, then proceed with clean-up. If ACM is known or highly suspected, contact EHS or A&E Construction Department to assist in determining the proper course of action

XV. MAINTENANCE PROCEDURES

Employees performing maintenance activities under OSHA Class IV that result in contact with ACM (but no disturbance) or employees performing maintenance activities under OSHA Class II intact or nonfriable or Class III nonintact or friable must adhere to the following guidelines:

- Do not drill holes or saw in ACM
- Do not sand, grind, cut, or abrade ACM. Do not use high speed buffers on floor tile
- Do not install partitions or dividers in such a way that they will damage the floor tile, ceiling tiles or plaster ceiling
- Do not install glued products such as rolled sheet flooring, carpeting, or any other product to asbestos floor tile
- Do not use an ordinary vacuum to clean friable ACM debris. Class IV workers including custodial and maintenance staff employees should report the minor fiber release episode to their supervisor immediately. The supervisor will be responsible for contacting one of the Asbestos Supervisors for cleanup of the debris. Cleanup operations involving ACM should only be performed with HEPA Vacuum.
- During the removal of intact floor tiles, avoid breakage to reduce the potential for the release of fibers. (Use 16-Hour O & M trained personnel or asbestos supervisors to perform these tasks.)
- ACM waste must be disposed of in 6 mil polyethylene bags with the proper NESHAP (Waste Generator Label), DOT (Placard) and OSHA (Danger) labeling requirements and transported to the temporary storage dumpster located at the Physical Plant.
- Documentation of waste must be submitted to shop supervisor.

When maintenance activities are required which may involve the disturbance of more than 25 linear feet of TSI, 10 square feet of surfacing

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material (utilizing a mini enclosure only) or 160 square feet of miscellaneous materials excluding flooring material, the work shall be contracted to an approved licensed asbestos abatement contractor.

When any outside contractor (electrician, HVAC, etc.) performs work that may involve the disturbance of the ACM identified in the building, the appropriate manager (such as the UNC-CH Construction Manager, Maintenance Supervisor, or other entity) that has hired the contractor must inform the Contractor of the existence of ACM. The designated person will inform the Contractor of the hazards associated with asbestos exposure. Confirming the identity of ACM which may be impacted by a project will include a review of the asbestos building inspection documents by EHS representative. The UNC-CH Construction Manager, Maintenance Supervisor or Building Administrator shall inform the building occupants of the project and the measures being taken to protect against airborne fiber release. The contractor is responsible for informing and insuring his/her employees and any subcontractors that all applicable regulatory requirements are met.

Specific Work Practice Procedures: Refer to Appendix D for the Compliance Chart for the OSHA Construction Industry Asbestos Standard for specific requirements for the various classes of work.

All work practices must follow OSHA's Three Key Rules for all Work:

1. Use wet methods
2. HEPA vacuum
3. Prompt cleanup

A. REMOVAL OF THERMAL SYSTEM INSULATION UTILIZING A GLOVEBAG:

The following work practice procedures shall be followed during the removal of pipe insulation (In occupied areas, this method should be performed after normal business hours) under Class I, II or III work activities. Please note that Class III workers (ASBESTOS O&M Trained) cannot remove more than one standard glovebag (60" x 60") of TSI.

1. Check the temperature of the pipe to ensure that it does not exceed 150° Fahrenheit. Note: High temperature glovebags may be required for steam lines exceeding 150° Fahrenheit.
2. Install critical barriers on all HVAC ductwork, floor drains and other openings and place the danger signs and barrier tape around the regulated work area.
3. Don respirator and disposable suit. Perform negative and positive pressure fit check.
4. Place a layer of 6 mil polyethylene sheeting beneath the work area.

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5. If necessary, cut approximately a foot down the sides of the glovebag and place the tools in the pouch.
6. Wrap tape around the pipe where you will attach the bag. Tape the bag closed.
7. Cut two small holes in the bag and insert the nozzles of the HEPA vac and the sprayer. Seal the openings with duct tape.
8. Smoke test the glovebag to insure that it is sealed airtight.
9. Spray the insulation with amended water, being sure to soak the area to be cut.
10. Cut the insulation with a saw or knife at each end of the section to be removed. Cut it lengthwise along the bottom with a knife.
11. Break the insulation away from the pipe and lower it to the bottom of the bag.
12. Spray the insulation with amended water to wash any asbestos to the bottom of the bag.
13. Spray, scrub, and wipe the exposed pipe to remove any asbestos on the pipe. Use a brush with nylon or fiber bristles. Spray lockdown on the pipe.
14. Grab the tools in your hands and pull the gloves inside out. Remove the rest of the air in the bag by briefly turning on the HEPA vac. Twist the sleeve and tie it off with two pieces of duct tape. Cut the sleeve between the tape at the twist. Put the sleeve containing the tools in the next glovebag to be used or open it in a pail of water for cleaning.
15. Turn the HEPA vacuum on again. Twist the bag below the pipe and tape it closed.
16. Slip a large plastic asbestos disposal bag around the glovebag. Remove the glovebag from the pipe and fold it into the disposal bag. Seal and label the bag.
17. Apply encapsulant paint on the cut edges of the asbestos pipe and apply a canvas cloth to seal the open ends.
18. Vacuum the work area, step to the decontamination area and vacuum your clothing.
19. Remove and wipe your respirator with a damp cloth. Remove your suite inside out and place it in an asbestos disposal bag with contaminated rags, used filters, and decontamination plastic sheeting. Seal and label the bag for disposal.
20. If the scope of work includes the removal of more than 3 linear feet, contact EHS to conduct monitoring and a visual inspection.
21. Remove barrier tape and signage from the work area.
22. Transport waste to the storage facility (thru The Asbestos Supervisor for Facilities)

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B. DRILLING INTO ACM:

1. If possible, shut off the HVAC system serving the work area and install critical barriers.
2. Mark the drilling location
3. Don respirator, disposable gloves and disposable suit. Perform negative and positive pressure fit check. (Once a NEA is established, the PPE with the exception of the non-porous disposable gloves can be omitted from the requirements)
4. Pre-clean work area if visible dust or debris is present with amended water and/or HEPA vacuum.
5. Place a drop cloth of 6 mil polyethylene sheeting beneath the work area.
6. Fill a paper cup with shaving cream and apply the shaving cream side down to the substrate.
7. Drill through the surface and remove the drill bit being sure to clean with a wet wipe or water.
8. Wipe the shaving cream off the surface with a wet wipe and place it in disposal bag.
9. If debris falls to the ground, either wet wipe, HEPA vacuum and/or dispose in an asbestos disposal bag.
10. Dispose of gloves in the asbestos waste bag.
11. Transport waste to the storage facility (thru The Asbestos Supervisor for Facilities)

C. MINI ENCLOSURE (Plastic Closet): The mini enclosure should be sized to house a maximum of two workers.

1. If possible, shut off the HVAC system serving the work area.
2. Install critical barriers on all HVAC ductwork, floor drains and other openings and place the danger signs and barrier tape around the regulated work area.
3. Construct the mini enclosure from polyvinylchloride (PVC) piping and line with two layers of 6 mil poly. Place a small layer of poly on the ground outside of the containment as decontamination area.
4. Smoke test the enclosure
5. Create an opening in the enclosure and add protective flaps over the opening.
6. Install a HEPA vacuum to the enclosure placing the vacuum on the opposite side of the entrance opening. The HEPA vacuum functions as the negative air machine.
7. Install tools needed to perform the abatement.
8. Don respirator, disposable gloves (optional) and two disposable suits.
9. Apply the amended water to the ACM using a garden sprayer. Remove no more than the amount held by one waste bag.

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10. Place the material in an asbestos disposable bag (double bagged) and remove from the mini enclosure after wiping down.
11. HEPA vacuum and wet wipe the interior surfaces of the mini enclosure.
12. Apply lockdown to all of the surfaces within the mini enclosure.
13. Upon completion, clean off the outside suit with a HEPA vacuum.
14. Remove the outside suit by rolling the suit inside out and place it in a disposable bag. Step on to decontamination area outside the mini containment and remove the remaining suit while wearing the respirator.
15. Thoroughly wash the respirator and hands after exiting.
16. Contact EHS to conduct monitoring and/or visual inspection of the work area.
17. Once the lockdown has dried, tear down the mini enclosure and place the polyethylene sheeting in waste bags.
18. Transport waste to the storage facility (thru The Asbestos Supervisor for Facilities)

D. REMOVAL OF FLOORING MATERIAL AND MASTIC UTILIZING NON-FRIABLE REMOVAL TECHNIQUES (CLASS II):

1. If possible, shut off the HVAC system serving the work area.
2. Install critical barriers on all HVAC ductwork, floor drains and other openings and place the danger signs and barrier tape around the regulated work area.
3. Install negative pressure differential machines equipped with a HEPA filter in the work area and exhaust (when feasible) to the outside via window, doorway, etc.
4. Don respiratory protection and personal protective equipment.
5. If the mastic is scheduled to be removed, remove the baseboards and tape a two foot wide layer of 4-6 mi poly along the base of the walls as a splashguard while removing the mastic.
6. Using a heat gun or an infrared heat machine, heat the tiles and remove using a mason's trowel. Exception: If the flooring material was identified as being damaged and brittle, do not use heat and gently remove the tiles and place them in a sealed bag.
7. Class III Workers (ASBESTOS O&M Trained) can only abate the amount of material that will fit in one waste bag if the flooring material is friable.
8. Place the tiles in cardboard boxes and then place into the disposable bag in order to prevent puncturing the disposal bags. Seal the bags with the goose neck seal.
9. If removing more than 160 square feet of non-friable flooring material, contact EHS to determine if air monitoring and/or visual inspection is necessary.
10. Transport the waste to the temporary storage facility maintained by The Asbestos Supervisor for Facilities.

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E. PRINCIPLES OF CONTAINMENT AND PERSONAL PROTECTION: When performing asbestos abatement activities, the following containment and personal protection practices are to be followed:

1. Personnel are to wear a minimum of a half face cartridge respirator equipped with a HEPA (P100) filter. Use a glove bag for removal of TSI.
2. Plastic sheeting is to be used as a drop cloth on the floor below any TSI and surfacing material that is to be removed.
3. A step-off drop cloth of polyethylene sheeting is to be placed adjunct to all work areas as a decontamination area.
4. Wet methods of ACM removal are to be used to minimize airborne asbestos. Exception: If dry removal has been approved due to electrical or other safety hazard.
5. The room or area must be isolated from the building ventilation system.
6. Enclosures under negative pressure are to be constructed to isolate the ACM removal from other areas of the building.
7. Warning signs are to be posted outside the room or enclosure with the following information: "Danger, asbestos cancer and disease hazard; authorized personnel only; respirators and protective clothing are required in this area."
8. Surfaces potentially contaminated with ACM are to be cleaned using wet methods or a HEPA vacuum.
9. Contaminated waste is to be placed in sealed, doubled 6 mil bags or other approved leak-tight containers and transported to the temporary storage area at Facilities Services.

(See Appendix D-Compliance Chart)

XVI. INTERNAL INSPECTIONS & INSPECTIONS OF OUTSIDE CONTRACTOR WORK.

Annual visual inspections are conducted for buildings containing known friable sprayed-applied asbestos fireproofing. The inspection consists of an evaluation of the condition of the sprayed-on surfacing material and air monitoring to determine if there are building occupant exposures above the limit for public areas (0.01 f/cc). Hamilton Hall contains friable spray-applied asbestos fireproofing.

The following steps shall be required by EHS:

1. Contact department/building representative to coordinate the sampling locations and time.
2. Calibrate air-sampling equipment.

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3. An air sample is collected on a cellulose ester membrane filter. Approximately 400 - 2400 liters of air will be collected per OSHA nonmandatory Appendix B. The time of sample and calculation of sample volume are recorded on the sample data sheet and on the 25 mm cassette containing the sample filter.
4. The condition of the ACM is evaluated for physical damage, water damage, deterioration, and the potential for disturbance due to accessibility of building occupants. Also, any activities that could disturb the ACM are documented and evaluated for employee exposures.
5. An inspection report, including air monitoring results, is prepared and sent to department / building representatives.

A. INSPECTION OF CLASS I AND II ASBESTOS WORK PERFORMED BY AN OUTSIDE CONTRACTOR

Large (>25 linear feet of TSI, >10 square feet of surfacing material) Class I and II asbestos work on campus shall be performed by outside contractors. These removal projects shall be periodically inspected by EHS. EHS shall inspect large Class I and II removal projects by participating in the pre-work containment visual, conduct periodic site visits, and participate in the final visual inspection prior to clearance testing. The Building Construction Management shall inform the project design firm and/or the air monitoring professional that EHS must be contacted to participate in the prework containment visual and to conduct a visual inspection prior to clearance testing.

B. WARNING SIGNS

OSHA Construction Standard 1926.1101 (k) (6) requires that signs be posted at the entrance to mechanical rooms/areas in which employees reasonably can be expected to enter and which contain ACM and/or PACM. The signs are to include location, identification of material, and appropriate work practices to prevent disturbance. Signs are to be in comprehensible languages.

The sign for asbestos thermal systems insulation material reads as follows:

WARNING!

Some of the pipe insulation and other thermal system insulation in this room contain asbestos. Avoid creating dust from any insulation. If disturbance of this material is anticipated during any work task then contact the Environment, Health and Safety (962-5507) prior to beginning work.

The sign for asbestos surfacing material reads as follows:

WARNING!

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This ceiling surface contains asbestos. Avoid contact or disturbance of the surfacing material on this ceiling. If disturbance of this material is anticipated during any task, contact the Environment, Health and Safety (962-5507) prior to beginning work.

C. INSPECTION OF HOUSEKEEPING BUFFING OPERATIONS:

According to OSHA regulations Housekeeping buffers used for stripping floor wax from vinyl asbestos floor tiles must not operate above 300 RPM. Wet methods and low abrasion floor pads are also to be used. Periodic inspections of housekeeping personnel are conducted to ensure that these requirements are followed.

XVII. EMPLOYEE EXPOSURE ASSESSMENT AND MONITORING

OSHA regulations require that each employer who has a workplace or work operation covered by the standard shall perform monitoring to determine accurately the airborne concentrations of asbestos to which employees may be exposed. These must be breathing zone air samples representative of 8-hour time-weighted average and 30-minute short-term exposures. The following work operations should be reported to EHS to determine if exposure monitoring is necessary:

- Glove bag removal of TSI
- Clean up of damaged friable ACM (TSI or surfacing material) that has fallen to the floor or other horizontal surfaces
- Repair and/or removal of small amounts of surfacing ACM for maintenance activities or construction activities
- Removal of drywall, tape and spackling compounds
- Removal and/or replacement of ceiling tiles
- Removal of window glazing
- Repair and/or removal of damaged transite material
- Repair, removal or disturbance of insulation within fire doors (unless the entire door component is being removed and disposed of properly)
- Repair and/or removal of roofing materials with the exception of flashing, coatings, adhesives and mastics
- Repair and/or removal of other miscellaneous materials as required by EHS

XVIII. EMPLOYEE COMPLAINTS

- A. Complaints relating to potential asbestos exposure filed by building occupants shall be reported to EHS.
- B. EHS shall inspect their work area and evaluate their potential for exposure.
- C. The evaluation may require the EHS representative to collect a bulk sample to determine if the material contains asbestos.

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- D.** The EHS representative shall perform air monitoring if there is any disturbance of ACM that could result in personnel exposure to airborne asbestos.
- E.** Examples of complaints include: ceiling material falling onto an employee's desk, questions about containment during an ACM removal project, damaged ACM debris on the floor; employees encounter potential ACM during the performance of their duties and have questions about their potential exposures.
- F.** A written report of the investigation is maintained by EHS with a copy being sent to the employee.