

North Carolina State University

Asbestos Management Plan

1.0 Introduction

Purpose

The purpose of this plan is to establish the policies and procedures to be used at North Carolina State University (NCSU) in the management of building materials containing more than one percent (>1%) asbestos. This plan is to be used in conjunction with the State and Federal regulations covering asbestos, and the NC Department of Administration's State Construction Office Guidelines and Policies on Asbestos Abatement.

Scope

The requirements of this plan apply to all University employees who work in or around areas that contain asbestos containing materials (**ACM**). It also applies to contractors and their subcontractors who have been hired to work on campus.

Policy

NCSU will follow the NC Department of Administration, State Construction Office policy on ACM found in state owned buildings which states:

If asbestos containing material is in good condition and will not be disturbed during renovation, the material may be left in place and the owner will continue the upkeep and maintenance of the material. If asbestos containing material is to be disturbed during renovation and/or demolition activities, then it shall be removed. The asbestos containing material removal shall be designed and abated by accredited individuals.

The basis for this policy is that intact and undisturbed ACM does not pose a health risk to building occupants. When ACM is properly managed, release of asbestos fibers into the air is minimized, and the risk of asbestos related health problems is negligible.

It shall also be policy that no asbestos containing material be purchased, used, or installed on campus as long as a suitable substitute is available. The Environmental Health and Safety Center shall be consulted if a substitute for an asbestos product cannot be found.

Applicable Regulations

- < 15A NCAC 19C.600: North Carolina Administrative Code - Asbestos Hazard Management Program
- < 29 CFR 1910.100: OSHA - Asbestos Standard for General Industry
- < 29 CFR 1926.1101: OSHA - Asbestos Standard for the Construction Industry

- < 40 CFR Part 61, Subpart M: EPA - National Emissions Standards for Hazardous Air Pollutants (NESHAPS)
- < 40 CFR Part 763: EPA, Subpart E, Asbestos
 - Appendix B - Work Practices and Engineering Controls
 - Appendix C - Asbestos Model Accreditation Plan
 - Appendix D - Transport and Disposal of Asbestos Waste

These regulations are available for review by contacting the Asbestos Program Manager.

Applicable References

- < *North Carolina Asbestos Rules, Regulations, and Procedures*; Information packet from the Health Hazards Control Unit, NC Department of Health and Human Services
- < *Guidance for Controlling Asbestos-Containing Materials in Buildings*, (APurple Book@) EPA publication number: 560 / 5-85-024
- < *Managing Asbestos In Place, A Building Owner=s Guide to Operations and Maintenance Programs for Asbestos-Containing Materials*, (AGreen Book@) EPA 20T-2003
- < *Asbestos Abatement Guidelines and Policies*, NC Department of Administration, State Construction Office
- < *Guidance Manual: Asbestos Operations & Maintenance Work Practices*, National Institute of Building Sciences,
- < *Safety & Health Requirements for Asbestos*, Office of State Personnel

These references are available for review by contacting the Asbestos Program Manager.

2.0 Responsibilities

The Environmental Health and Safety Center (**EHSC**) shall:

1. Designate someone as the University's Asbestos Program Manager (**APM**).
2. Provide technical review of abatement designs and specifications for asbestos abatement projects.
3. Provide asbestos survey data interpretation and sample collection when needed.
4. Periodically monitor activities at asbestos abatement job sites.
5. Provide initial Asbestos Awareness training and annual refresher training when requested.
6. Investigate asbestos concerns of employees, contractors, and building occupants.
7. Investigate reports of damaged asbestos.
8. Investigate occurrences of unintended asbestos disturbances.
9. Provide air monitoring as needed for air borne asbestos fibers in non-public areas.
10. Maintain a list of damaged asbestos locations.

Facilities Planning and Design shall:

1. Attend the asbestos awareness training class given by EHSC.
2. Identify projects that will disturb ACM.
3. Notify the APM of any projects that will require asbestos abatement.

4. Forward to the APM for review a copy of the draft asbestos abatement design.
5. Notify the APM of any meetings with designers or contractors concerning asbestos abatement projects.
6. Identify the presence and location of ACM in or adjacent to all work areas and notify all prospective contractors by making notations on blueprints and specification documents.
7. Forward to the APM copies of laboratory reports for all asbestos bulk samples taken by contractors.

Construction Management shall:

1. Attend the asbestos awareness training class given by EHSC.
2. Serve as the project manager for asbestos abatement projects.
3. Notify the APM of any meetings with designers or contractors concerning asbestos abatement projects.
4. Notify building occupants of forthcoming abatement projects and provide project contact information.
5. Consult with the APM regarding questions or concerns about abatement projects.
6. Notify the APM of any changes to the abatement design.
7. Forward to the APM copies of daily air sampling results at abatement projects.
8. Notify the APM of reportable incidents at asbestos abatement job sites.
9. Keep a copy of the asbestos waste shipment record with the project file and send relevant information to Facilities Planning and Design for updating the asbestos database.
10. Confirm that all contractors are aware of the presence and location of ACM in or adjacent to their work areas.

Facilities Operations shall:

1. Attend the asbestos awareness training class given by EHSC and refresh this training annually.
2. Follow the procedures for working around ACM listed in the handout "Asbestos in Buildings, Guidance for Service and Maintenance Personnel."
3. Identify projects that will disturb ACM.
4. Consult with the APM about questions concerning the identity of materials.
5. Notify the APM of projects that will disturb ACM.
6. Notify the APM of meetings with asbestos abatement contractors.
7. Keep a copy of the asbestos waste shipment record with the project file and send pertinent information to Facilities Planning and Design for updating the asbestos database.
8. Forward to the APM copies of daily air sampling results at abatement projects and the laboratory reports of any bulk samples collected by contractors.
9. Notify all prospective contractors of the presence and location of ACM in or adjacent to their work areas.
10. Monitor the condition of known or presumed ACM in their work areas and notify the

Service Center of damaged ACM.

11. Notify the APM of the disturbance of ACM by unauthorized personnel.
12. Obtain the proper training and consult with the APM before performing any asbestos response activities.

Building and Departmental Liaisons shall:

1. Attend the asbestos awareness training class given by EHSC.
2. Become familiar with the ACM in your building/area and inform building occupants not to disturb this material.
3. Monitor the condition of ACM in your building/area and notify the Service Center if it becomes damaged or starts to deteriorate.
4. Identify projects that will disturb ACM and notify the APM.
5. Notify the APM of any meetings with asbestos contractors.
6. Notify building occupants of asbestos projects.
7. Forward to the APM any asbestos sampling results.

3.0 Determining the Presence of Asbestos

An asbestos survey and assessment has been conducted at the buildings on main campus built before 1980 and supported by appropriated funds. This survey was conducted in accordance with EPA/AHERA guidelines and consisted of a visual inspection of all accessible interior building materials and a representative sampling of suspect material. A laboratory accredited by the National Voluntary Laboratory Accreditation Program (NVLAP) analyzed the samples. Materials identified as containing greater than one percent (>1%) asbestos were assessed for physical condition and the potential for future damage.

Before facilities modifications or maintenance work is to begin, the asbestos survey shall be checked to determine the presence, location, and quantity of ACM in and adjacent to the work area. Copies of the asbestos survey are located in Facilities Planning and Design, Construction Management, Facilities Operations, and Environmental Health and Safety. If needed, contact the APM for assistance with interpretation of the survey results.

If the area in question is not covered by the asbestos survey, an inspector with a current accreditation from the Health Hazards Control Unit as an Asbestos Inspector shall be hired to conduct an asbestos survey. Samples shall be analyzed by a NVLAP accredited laboratory. **A copy of the asbestos survey shall be promptly forwarded to the APM for his records.** For small maintenance jobs that require only a few samples to be taken, contact the APM for assistance.

For areas that have not been surveyed and were constructed before 1980, it is required to consider thermal system insulation (pipe/boiler insulation), surfacing materials (ceiling plaster, fireproofing), and resilient flooring materials as Presumed Asbestos Containing Material (**PACM**) until testing confirms otherwise.

4.0 Notifications

Building Occupants & Contractors

The following shall be notified of the presence, location, and quantity of ACM and/or PACM:

1. Prospective employers applying or bidding for work whose employees may be expected to work in or adjacent to areas containing this material.
2. Contractors hired to work in or adjacent to areas containing this material.
3. University employees who may work in or adjacent to areas containing this material.
4. Building occupants who may incidentally come in contact with this material.
5. Tenants who occupy University spaces containing this material.

This notification should be in writing.

Health Hazards Control Unit (HHCU)

Notification shall be made to the HHCU by submitting an Asbestos Permit Application and Notification for Demolition/Renovation Form (DHHS 3768) for the following occurrences:

1. Individual asbestos removals where 160 square feet, 260 linear feet, or 35 cubic feet or greater of regulated asbestos containing material is to be removed.
2. Nonscheduled asbestos removals involving less than 160 square feet, 260 linear feet or 35 cubic feet of regulated asbestos containing material if the additive total amount of material removed from the University during a calendar year exceeds 160 square feet, 260 linear feet or 35 cubic feet.
3. A nonscheduled asbestos removal is a removal required by equipment failure, which is expected to occur within a given period based on past operating experience, but for which an exact date cannot be predicted.
4. Demolition or intentional burning of a building, whether or not it contains asbestos. Moving a structure from one location to another is also considered a demolition.

Submitting form DHHS 3768 satisfies the requirements of both the National Emission Standards for Hazardous Air Pollutants (NESHAP) and the North Carolina Asbestos Hazard Management Program rules for asbestos removals.

Asbestos Program Manager (APM)

Notification shall be made to the APM located in the Environmental Health and Safety Center of the following occurrences:

1. Meetings with asbestos abatement designers and contractors.
2. Pre-bid, pre-construction, and project progress meetings for asbestos abatement projects.
3. Asbestos abatement job information to include location, type of material, start /stop dates, abatement contractor, industrial hygiene contractor, and university project manager/coordinator.

The preferred manner of notification is by e-mail addressed to: bill_crocker@ncsu.edu.

5.0 Managing Asbestos

At the present time all University asbestos response activities including Operations and Maintenance (**O&M**) activities are conducted by off campus contractors. When Facilities Operations chooses to organize an asbestos response team, they shall work with the APM to develop a program that includes the following elements:

1. Worker and supervisor training requirements.
2. Worker protection requirements, to include medical surveillance, respiratory protection program, and personal protective equipment.
3. Work permit system to control activities that might disturb ACM.
4. Work practices and procedures. (See *Guidance Manual: Asbestos Operations & Maintenance Work Practices*, National Institute of Building Sciences).
5. Record keeping requirements needed to document O&M activities.

The following work practices are prohibited for work around ACM:

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

Maintenance and custodial activities performed in areas containing ACM shall be carried out in a manner that does not disturb the material.

The following housekeeping practices shall be observed:

1. Keep areas containing ACM as dust free as possible.
2. Clean up dust, debris and spills as soon as possible.
3. Never use compressed air to clean dust and debris.
4. Always use wet methods when possible.
5. Always use HEPA filtered vacuuming equipment in areas that could be contaminated with ACM. The equipment shall be used and emptied in a manner that minimizes the reentry of asbestos into the workplace.
6. Bag and label waste that could be contaminated with ACM.

The following floor care practices shall be observed for flooring containing ACM or PACM:

1. Never sand or scrap flooring material.
2. Strip floor finishes using low abrasion pads, wet methods, and buffer speeds lower than

300 rpm.

3. Never burnish or dry buff floors unless there is sufficient finish to keep the pad from contacting the floor.
4. Never dust, dry sweep, or use a regular vacuum cleaner in areas that could be contaminated with ACM.

Contact a supervisor or the APM if visible dust or debris from building materials is discovered in areas that contain ACM.

6.0 Control of Asbestos Emissions

The control of asbestos emissions during renovation and demolition activities is required by the National Emissions Standards for Hazardous Air Pollutants (**NESHAP**). These standards contain notification and training requirements as well as work practices for asbestos emission control.

Notification requirements are satisfied by submitting the Asbestos Permit Application and Notification for Demolition/Renovation Form (DHHS 3768) to the HHCU. This notification is required for renovation of buildings that may contain asbestos, and for the demolition of buildings whether or not asbestos is present. See Section 4 for more information on notification requirements.

Attending a training class that has been approved by the HHCU and obtaining accreditation from the HHCU satisfies the training requirements. See Section 8 for more information on training requirements.

The procedures for asbestos emission control include, but are not limited to:

1. In buildings containing a combined amount of regulated (friable) ACM of at least 260 linear feet on pipes or 160 square feet on other components, remove all regulated ACM from a buildings being demolished or renovated before any activity begins that would break up, dislodge, or similarly disturb the material.

Note: It is not required to remove non-friable ACM in good condition before a demolition if it will not become friable during the demolition. However, this will result in the demolition debris being considered contaminated with ACM which could limit disposal options and/or increase the disposal cost.

2. When removing regulated ACM, adequately wet the material and ensure that it remains wet until collected and sealed in leak-tight containers in preparation for disposal.
3. When removing a building component that is covered with or contains regulated ACM, adequately wet all exposed material during cutting or disjoining operations and remove the component in such a manner that will avoid damaging or disturbing the material.
4. Wetting regulated ACM is not required if one of the following emission control methods is used:
 - i. A local exhaust ventilation and collection system designed and operated

- to capture the dust produced by the removal of ACM.
- ii. A glove-bag system designed and operated to contain the dust produced by the removal of ACM.
 - iii. Leak-tight wrapping that contains all ACM during building component removal.
5. When a building is demolished by intentional burning, all ACM including non-friable material must be removed beforehand.
 6. All asbestos containing waste shall be deposited as soon as practical in a waste disposal site approved to accept such waste. Waste shipment information shall be maintained on Form DHHS 3787 and this form shall be presented to the waste site operator at the time the waste is delivered to the site. The waste site operator shall sign and date this form and return a copy to the waste generator to verify that the asbestos waste has been delivered to the designated disposal site.

All activities involving contact with ACM shall be conducted in a manner that does not cause visible emissions to the outside air.

7.0 Managing Asbestos Abatement Projects

Regardless of the size of the asbestos abatement project, careful planning and execution are essential due to the hazards associated with disturbing ACM.

Improper removal procedures or handling of asbestos waste can increase the asbestos levels in a building, thereby increasing the potential for exposure to the building occupants.

Asbestos Project Team

The successful completion of asbestos projects depends on the cooperation of all the members of the Asbestos Project Team. This team is made up of individuals from:

1. Environmental Health & Safety Center (the APM)
2. Facilities Planning & Design
3. Construction Management
4. Facilities Operations
5. Building/Department Liaisons

Team members work with architects, engineers, contractors, and industrial hygiene professionals to complete the asbestos project safely and with minimum inconvenience to building occupants.

In order for the Asbestos Program Manager to do his part he must be notified of all asbestos project/job activities that occur. This includes:

1. Initial planning meetings with architects or asbestos designers.
2. Work site walk throughs with designers or contractors.
3. Pre-bid and pre-construction meetings.
4. Weekly progress meetings.
5. Start/stop dates for small jobs, including type of ACM to be removed.

The APM must be kept informed in order to respond to questions or concerns from the campus

community or state regulators.

Once asbestos has been identified in an area that is scheduled for renovation or maintenance activities, clear and precise contract/job specifications must be written for its removal.

Asbestos Abatement Design

A comprehensive Asbestos Abatement Design shall be prepared for asbestos projects involving the removal of more than **3,000 square feet, 1,500 linear feet, or 656 cubic feet** of friable ACM. This design shall be prepared by an individual with a current NC Asbestos Designer accreditation from the HHCU. Facilities Planning and Design maintains an open-ended service agreement with several asbestos designers.

It is possible the APM will request an Asbestos Abatement Design for a project that is smaller than that indicated above. For example, the removal of friable sprayed-on fireproofing in or adjacent to occupied areas should have a design even if the amount of material to be removed is less than 3,000 square feet. The decision for a design will be made on a case-by-case bases by the APM.

The Asbestos Abatement Design is a detailed document containing written technical specifications and performance standards. It should also contain graphical indications and notations on blueprints. The NC Department of Administration, State Construction Office has written guidelines for the removal of ACM in state owned buildings. These guidelines shall serve as an example of an Asbestos Abatement Design. A copy of these guidelines is available for inspection by contacting the APM. The Asbestos Abatement Design should be used as the primary bid document for the asbestos abatement.

Copies of the Asbestos Abatement Design shall be promptly forwarded to the APM for review. The Asbestos Designer shall be instructed to copy the APM on all correspondence and emails.

Scope of Work

For smaller asbestos jobs that do not require a design, a Scope of Work is needed to clearly define the job and identify special requirements, such as working after hours. Only general work procedures should be included, such as "remove 20 liner feet of pipe insulation as identified." Written in this manner the Scope of Work can be written by someone other than an accredited designer. Construction Management's *Section IV: Technical Specifications for Asbestos Abatement Contractors* shall be attached to the Scope of Work.

For complicated jobs, such as those involving sprayed applied fireproofing, it may be desirable to hire an asbestos designer to create a design even if it is not required based on square footage. Contact the APM for assistance with identifying jobs requiring an Asbestos Abatement Design or for writing a Scope of Work.

Asbestos Contractor

Selecting a competent asbestos contractor who is committed to quality work is vital for a successful, problem free abatement. The lowest bid should not be the only qualifying factor for an asbestos contractor. The following should be included in the selection process:

1. Confirmation of NC asbestos accreditations for all workers and supervisors.
2. Confirmation of NC general or specialized contractor's license.
3. Obtain evidence of financial stability such as bond amounts and adequate type and amount of liability insurance for the size of project.
4. Check references of recent customers for whom the contractor has worked.
5. Verify that contractor has written standard operating procedures to included worker protection plans such as medical monitoring and respirator protection plans.

An architect or prime contractor should not hire an asbestos contractor as a sub-contractor without first getting approval from the University. Construction Management maintains a list of asbestos contractors that have been pre-approved to work on campus under their Open Ended Service Agreement. Contact the APM for assistance with reviewing the qualifications of asbestos contractors.

The asbestos contractor is responsible for submitting the removal permit application (DHHS 3768) ten days before work is to start and completing the asbestos waste shipment record (DHHS 3787) for all regulated waste generated. A copy of the waste shipment record signed by the operator of the designated asbestos waste disposal site shall be returned to the University project manager and kept with the project file.

Project Monitor (air monitor)

An industrial hygiene firm shall be hired by the University to act as the Project Monitor. The Project Monitor, commonly referred to as the air monitor, observes abatement activities to ensure they are completed according to specifications and in compliance with all regulations. The Project Monitor serves as the University's technical advisor during the asbestos removal and shall:

1. Review the contractor's pre-job submittal package, which includes a copy of the removal permit, notification letters, employee list with their accreditation numbers, waste disposal approval, documentation of medical surveillance and respirator protection programs, and the initial exposure assessment.
2. Ensure contractor is using the proper equipment and that it is in good working order.
3. Ensure the work area is properly prepared with critical barriers, polyethylene floor and wall coverings, HEPA filtration devices are in place and exhausted to the outside, the HVAC system is turned off, and warning signs are posted before removal is allowed to begin.
4. Remain at the job site during asbestos removal.
5. Ensure the integrity of containment and negative pressure in the work area is maintained at all times.
6. Perform ambient air monitoring specified by an Abatement Project Monitoring Plan to ensure the effectiveness of the containment and that there is no contamination outside of the work area.
7. Maintain a daily activity and visitor log for the job site.
8. Alert the NCSU Project Manager and the Asbestos Program Manager should any significant problems arise.
9. Perform a final visual inspection and clearance air sampling before allowing

the containment to be removed.

10. Prepare a written report documenting all site activities and visitors, final visual inspection, and air sampling data. Included in this report shall be a clear description of the type and amount of material that was removed and the specific locations from which it came. This information is needed to update the University's asbestos survey database.

NCSU Project Manager

The point of contact between the University and asbestos contractors is the NCSU Project Manager. A project manager from Construction Management will serve as the NCSU Project Manager for all projects requiring an asbestos design. For smaller asbestos jobs the project manager will be from either Construction Management or Facilities Operations. The NCSU Project Manager shall:

1. Prepare bid documents that include an asbestos design reviewed by the APM or a scope of work that includes the Technical Specifications for Asbestos Abatement Contractors.
2. Require all potential bidders to attend a pre-bid meeting and project area walk through in order to gain a full understanding of project requirements.
3. Review contractor's qualifications with assistance from the APM.
4. Coordinate scheduling and staging area between the asbestos contractor, project monitor, and building liaison.
5. Notify building occupants of the asbestos project and post signs in the building giving contact information for himself, emergency serves, the project monitor, and the APM.
6. Notify the project monitor to promptly fax copies of all air monitoring results to the APM.
7. Visit the project site at least once per day during asbestos removal.
8. Notify the APM when the final visual inspection is scheduled.
9. Receive from the Project Monitor a closeout report that includes a review of the project, a clear description of the material removed and the location(s) from which it came, daily log sheets, air monitoring data, NC Waste Shipment Records (DHHS 3787), and any special reports on accidents or unusual events. A copy of this report shall be forwarded to the APM.
10. Forward information on the asbestos removed and the location(s) from which it came to the Manager of Facilities Information Systems, located in Facilities Planning and Design. This information will be used to update the University's asbestos database.

8.0 Training

The following shall attend the 2-hour Asbestos Awareness training class given by EHSC:

1. Maintenance and custodial staff,
2. Supervisors of maintenance and custodial staff,
3. Project planners and estimators,
4. Project managers,
5. Building liaison representatives,
6. Department representatives who may hire a contractor that could disturb building

materials.

Awareness training must be refreshed on an **annual** basis.

In addition to awareness training project planners must be familiar with the current Open Ended Service Agreement (**OESA**) with asbestos designers and project managers must be familiar with the current OESA with asbestos contractors.

The following training is require for anyone who wishes to purposely disturb ACM:

1. Class II (non-friable) work

Training is specific to category of material: intact flooring, intact primary roofing, wall board, siding shingles, gaskets & valve covers, and construction mastics.

- a) Worker – 8 hours,
- b) Supervisor (OSHA competent person) – 12 hours

2. Class III (Operations & Maintenance) work

Small scale repair and maintenance where ACM, including thermal system insulation (**TSI**) and surfacing material, may be disturbed.

- a) Worker – 16 hours (or less if specialized),
- b) Supervisor (OSHA competent person) – 16 hours

3. Motor pool mechanics

Supervisor trains mechanics on engineering controls and work practices for asbestos brake and clutch repair. No specified time requirements.

Asbestos training is required to be refreshed on an **annual** basis.

Contact the APM to schedule Asbestos Awareness training or for assistance with selecting an asbestos training class.

9.0 Record Keeping

The following asbestos management documents will be stored in permanent files:

- air and bulk sampling reports;
- inspection and assessment reports (survey);
- Operations and Maintenance program plan;
- work practices and procedures;
- ACM disturbance reports;
- asbestos waste shipment records and abatement information.

For employees engaged in asbestos-related work the following records shall be maintained:

- personal air sampling records for at least 30 years;
- objective data used to qualify for exemptions from OSHA's initial monitoring requirements

for the duration of the exemption;

- medical records for each employee subject to the medical surveillance program for the duration of their employment plus 30 years;
- all employee training records for one year beyond the last date of each worker's employment.