

Asbestos Management Plan

Clemson University Occupational and Environmental Safety



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Emergencies

*In the event of a suspected release/exposure to **Asbestos Containing Materials (ACM)** or **Presumed Asbestos Containing Material (PACM)** – any material that has not been tested for asbestos) employees shall:*

- *Stop what you are doing in the area of the suspected release/exposure*
- *Leave the area*
- *Secure the area by closing the door*
- *Contact the University emergency number (911 or 656-2222)*

Appropriately trained staff shall respond to the suspected release/exposure and conduct the following:

- *Isolate and secure the area*
- *Post warning signs on doors or at the area*
- *If possible, turn off fans, shut windows, seal the ventilation system, to prevent migration of fibers*

Only properly trained and qualified individuals are allowed to commence clean-up activities of fiber release emergencies. Clemson University has a designated Asbestos Consultant that will be called in immediately to document any potential contamination, conduct area environmental air sampling and devise a response action suitable to correct the situation. A designated Asbestos Contractor shall be called in immediately for the abatement actions that are required.

Policy Statement

Employees have a right to a safe workplace. Federal and state law requires employers to provide their employees with working conditions that are free of known hazards. Clemson University is committed to providing a healthful and safe environment for all activities under its jurisdiction and complying with federal and state health and safety standards. As such, to minimize exposures to asbestos and to comply with asbestos regulations, this Asbestos Management Plan will be implemented and enforced. Individuals who do not comply with the Asbestos Management plan may be subject to discipline up to and including termination from the university.

When not properly managed asbestos-containing materials (ACM), may release asbestos fibers into the air and pose a health risk to faculty, staff, students, contractors and visitors. Compliance with all Environmental Protection Agency (EPA), South Carolina Department of Health and Environmental Control (SCDHEC) and South Carolina Occupational Safety and Health Administration (OSHA) regulations pertaining to the management, removal and disposal of ACM is a Clemson University policy.

Department Heads, Managers, and supervisors are responsible for the application and enforcement of University health and safety policies and procedures.

Purpose and Scope

Scope and Application of Asbestos related work at Clemson

This Asbestos Management Plan has been developed to protect the health and safety of the Clemson University employees, students, building occupants, and visitors in facilities owned by Clemson University from potential exposure to asbestos and is in accordance with applicable EPA, SC OSHA and State of South Carolina Department of Health and Environmental Control (SCDHEC) asbestos regulations.

Accordingly, the purpose of this plan is to establish a pro-active, in-place management program for recognizing, controlling and mitigating potential asbestos hazards at Clemson University.

All Clemson University employees, building occupants must follow the requirements outlined in the Plan for all projects of any size in facilities owned by Clemson University. This includes projects or tasks that disturb any existing building structure, or any other material which may contain asbestos. As defined by the South Carolina Department of Health and Environmental Control, even small projects which require removal, cutting, sanding, drilling or other disturbances of building materials which may contain asbestos are subject to this requirement.

Enforcement

All University staff are charged with ensuring compliance with this policy. Occupational and Environmental Safety will enact procedures to evaluate compliance. Violations of this plan may result in appropriate disciplinary measures in accordance with University policies and procedures. All violations found will be referred to the appropriate Supervisor, Division Head, University Compliance Officer and if necessary the Office of Human Resources.

Regulatory Summary

Clemson University is regulated to various extents under the following sets of asbestos regulations, depending upon the type of activity being conducted; these include:

- *SC DHEC Regulation 61-86.1, Standard of Performance for Asbestos Projects*
- *EPA Asbestos NESHAP (40 CFR Part 61 Subpart M)*
- *OSHA Asbestos in Construction Standards (29 CFR 1926.1101)*
- *OSHA Asbestos General Industry Standards (29 CFR 1910.1001)*

Owned/Leased Buildings

Clemson University has a responsibility to ensure compliance with the asbestos regulations and this Asbestos Management Plan in all buildings owned by Clemson University, including spaces leased to third parties. Clemson University is also responsible for work safety in buildings occupied by the University that are owned and operated by entities other than the University. In such instances, the University will endeavor to comply with any applicable Asbestos Management Plan maintained by such building owners.

Asbestos Program Manager

The designated OES staff member that is responsible for the Asbestos Management Plan. Asbestos related work shall take place only with the Asbestos Program Manager's knowledge. Emergency situations will be brought to his/her attention as soon as possible. The designated staff also maintains historical files of all inspections, bulk sampling and abatement projects for all University buildings and integrates this data into the University's asbestos inspection report database.

- *Provide information to the University administration to support decisions on the asbestos management program.*
- *Coordinate and communicate with project managers asbestos related support services.*
- *Provide expertise and guidance to departments to maintain compliance with regulatory requirements and university policy.*
- *Recommend appropriate response actions to control or eliminate potential hazards.*
- *Initiate asbestos abatement projects arising from health and safety hazards and emergencies.*
- *Audit asbestos abatement projects and consultant activities, as necessary.*
- *Communicate with regulatory agencies, as needed, as well as with the University community at large.*
- *Oversee OSHA 1910.1001 (Class IV) and O&M 1926.1101 (Class III) training for employees.*
- *Audit project requests, renovation/demolition projects to ensure asbestos containing materials are being handled correctly as necessary.*
- *Maintain the University's Asbestos Management Plan.*
- *Send an annual notice to Deans, Directors, Department heads, and Administrative Assistants informing them of the presence of asbestos at Clemson and the procedures that must be followed when renovations are planned.*

OSHA General Industry: 1910.1001

Training

OSHA requires employees performing "Class IV" activities to have "awareness training". "Class IV" activities are activities where employees contact but do not disturb ACM or PACM.

Awareness training is the most basic level of asbestos training and is required for all custodial employees at least annually.

Signage

In accordance with OSHA regulations, warning signs shall be posted at the entrance to all mechanical spaces with ACM/PACM. The Asbestos Program Manager will be in charge of maintaining these warning signs.

Labeling

In accordance with OSHA regulations, labels shall be posted on all materials containing ACM unless it is not feasible to do so (e.g., floor tile, mastic, etc.). The Asbestos Program Manager will be in charge of maintaining these labels.

Medical Surveillance and Employee Exposure Monitoring

Currently Clemson University does not have employees that meet the criteria requiring Medical Surveillance. Employee Exposure Monitoring is conducted as necessary.

Care of Asbestos-Containing Flooring Material

- *Sanding of flooring material is prohibited*
- *Stripping of finishes shall be conducted using:*
 - *Low abrasion pads*
 - *Speeds lower than 300rpm*
 - *Utilizing wet methods*
- *Burnishing or dry buffing shall only be conducted on floors with a sufficient coat of floor finish, and only on floors where tiles and adhesives will remain intact throughout the process*
- *Floor care includes:*
 - *Regular sweeping and wet mopping to maintain tile in good condition*
 - *Regular applications of floor finish*
 - *Use of mats in high traffic areas*

University personnel have a few options to maintain floor tile in place: sealing of the floors with floor finish, void filling, and spot repair.

Floor finishes can be applied to prevent damage to the raw tile and is often recommended in offices where chair casters are scratching flooring or where sand and salt in the winter months is abrading the tile. It is highly recommended that individual departments purchase mats to be placed underneath chairs with casters. Often, damage to tile can be prevented by the use of mats.

Void filling is the application of a cement feathering compound in small 'holes' in the tiles, usually at edges where tiles meet. This stabilizes the tile and prevents further chipping.

Adherence to these procedures remains the most effective option for maintaining floor tile in place. Broken and loose tiles should be reported through a work order. The appropriate maintenance staff will assess the tile for necessary repairs.

Operations and Maintenance: OSHA 1926.1101

Training

Operations and Maintenance (O&M) training is required for specific personnel who may disturb asbestos in the course of their work, whether this disturbance is active (cutting/drilling) or inadvertent (e.g., moving a ceiling tile contaminated with fireproofing or other ACM).

University staff who cut, drill, or otherwise disturb asbestos containing materials or building materials that have not been tested, as well as University staff who enter and perform work in any building space where damaged friable ACM is present (e.g., above suspended ceilings where spray-on fireproofing is present) shall have OSHA O&M training.

Responsibilities

Maintenance Supervisors –

- *Complete OSHA required 16 hour O&M Training.*
- *Notify Asbestos Program Manager prior to any ACM/PACM disturbance.*
- *Ensure any necessary asbestos testing is performed prior to commencement of work.*

Maintenance Employees –

- *Complete OSHA required 16 hour O&M Training.*
- *Examine work area for building materials that may be disturbed prior to start of job and contact supervisor to conduct a review of the asbestos database if needed.*
- *Conducting all work in accordance with University policy and training.*

Prohibited Activities

The following work practices shall not be used for any work that disturbs ACM, PACM, or materials that contain >1% asbestos regardless of the measured exposure level to the employee:

- *High-speed abrasive disc saws without point of cut ventilation to HEPA filtered vacuums or HEPA shrouded equipment*
- *Compressed air*
- *Dry sweeping, shoveling or other dry cleaning method of ACM or dust and debris containing ACM and PACM*
- *Employee rotation as a means to reduce employee exposure to asbestos Routine Maintenance and Cleaning*

Negative Exposure Assessment

Clemson will annually conduct a Negative Exposure Assessment (NEA) to verify no O&M worker is exposed above acceptable limits.

Asbestos Abatement Projects

General Policies

Departments shall not have employees perform any tasks that involve the disturbance of ACM/PACM. The performance of maintenance and activities disturbing ACM shall be performed by University Facilities staff who have EPA Class III (O&M) training and certification.

University Employees shall not perform Class I or II asbestos activities. Clemson University Employees with proper training may perform Class III and IV maintenance activities only. O&M 16 hour (Class III) training is required by maintenance staff to enter and perform any O&M activities in any building space where damaged friable ACM may be present including, but not limited to, above suspended ceilings where spray-on fireproofing is present, attics, crawl spaces, mechanical rooms, and wall cavities/interstitial spaces.

Clemson University Project Managers oversee all renovation or demolition projects within the University system. For any project which has the potential to disturb asbestos the Project Manager is responsible for the day to day oversight of the contractor's asbestos compliance, including signage, containment, etc. Ultimate responsibility for asbestos management and compliance rests with the Asbestos Program Manager, who serves as a resource for University projects.

Before beginning any renovation or demolition work, a Project Request Form must be completed by a University Facilities Project Manager, digitally signed by the Building Security Coordinator and submitted to fmojobreg@clermson.edu as outlined in the instructions. A Facilities Project Manager will then schedule a meeting and review the scope of work with the requestor. Any project where asbestos is present must be managed by University Facilities personnel.

The Asbestos Program Manager must review and approve all renovation or demolition work involving disturbance of ACM/PACM.

Review previous sampling data for the proposed renovation/demolition area. An asbestos inspection shall have been performed no earlier than three years prior to the renovation or demolition, or, if more than three years have elapsed since the most recent inspection, the previous inspection shall be confirmed and verified by a person licensed by DHEC as a building inspector and approved by the Clemson University Asbestos Program Manager.

If asbestos abatement is required, the abatement cost will be rolled into the overall total project cost.

Any person that will conduct work not considered a renovation, demolition or alteration (i.e. operations and maintenance tasks), is responsible for ensuring that no ACM is disturbed while performing work. Contact the Asbestos Program Manager to determine if previous sampling data exists or testing is required.

Responsibilities

Project Manager – The individual who is assigned responsibility for the management of a renovation, demolition or maintenance project. The Project Manager may be an employee of Facilities, Housing, Athletics, or any other department of the University who is sponsoring and/or overseeing the construction or renovation. The Project Manager is responsible for ensuring that all requirements of this document are followed for any project assigned to them.

- *Obtain/maintain Class IV ACM Awareness training at a minimum; O&M training highly recommended.*
- *Review project request forms and proposed scope of work with the requestor.*
- *Request asbestos inspection for proposed projects.*
- *Provides cost estimate including abatement for proposed projects.*
- *Notify Asbestos Program Manager prior to any ACM/PACM disturbance.*
- *Notify building occupants and post required signage prior to any asbestos related work commencing.*

Regulatory Requirements involving ACM removal/repair/maintenance

According to federal and state (DHEC) regulations, removal or maintenance of ACM falls under one (1) of four (4) categories:

Class I & II – Removal of TSI or Surfacing materials (Class I) and Miscellaneous materials (Class II), greater than 3 square or linear feet Class I and II are considered activities that require licensed asbestos abatement workers.

Class III – Repair and maintenance that could disturb a small amount of ACM (less than 3 square or linear feet) – examples are: splicing asbestos electrical wire, removing an old gasket from a flange, removing less than 3 Ft² of tile, or removing or repairing less than 3 linear feet of pipe insulation.

Class IV – Maintenance and custodial activities that contact but do not disturb ACM or PACM. Employees conducting Class IV asbestos work must have attended an asbestos awareness training program.

University Employees shall not perform Class I or II activities. Clemson University Employees with proper training may perform Class III and IV maintenance activities only.

Signage and Notifications

Building Occupant Notifications

Prior to any scheduled asbestos abatement work, building occupants will be notified ten days prior to the start of work. The current asbestos notification documents can be found at:

<https://cufacilities.sites.clemson.edu/documents/maintenance/Project%20Notification%20Signage.pdf>

The Asbestos Program Manager will send an annual notice to Deans, Directors, Department Heads and Building and Emergency Contacts informing them of the presence of asbestos at Clemson University and the procedures that must be followed when renovations are planned.

Contractor Notifications

Prior to arriving on campus to work, contractors will have been notified about the presence of asbestos containing materials through the contract documents. Additionally, Clemson Project Managers will notify contractors about the presence of asbestos containing materials in their work area. Contractors will ensure that all employees and subcontractors know of the possibility of encountering asbestos containing materials.

It is expected that all contractors and their sub-contractors doing work for the University are in compliance with all applicable federal and state regulations.

Newly Installed Materials

All replacement building materials should be asbestos-free. It is up to the Project Manager or requisitioner of the project to request written documentation that replacement materials do not contain asbestos. The Asbestos Program Manager can assist with review of replacement building materials. Alternatively, newly installed materials can be sampled by a SCDHEC-licensed building inspector for asbestos content. Copies of inspection results must be forward to the Asbestos Program Manager.

Asbestos Inspections

Per SCDHEC R. 61-86.1, Section VI, A.1., prior to beginning any renovation (of any size) and/or demolition operation at a Clemson University owned or operated facility, an asbestos inspection must be performed. The purpose of the asbestos inspection is to identify the presence, location, quantity and condition of any ACM that will or may be disturbed or otherwise impacted during the course of the project. To request an asbestos inspection for renovation or demolition purposes submit a University Facilities work order/project request form.

Asbestos inspections must be performed for all operations and maintenance work as well as other activities that disturb building materials such as, but not limited to, drilling, cutting, sanding, inserting and/or removing screws/nails.

All asbestos inspections must be performed in accordance with Section VI of SCDHEC Regulation 61-86.1. The inspector will conduct the asbestos inspection based on the scope of work provided.

Inspection is required regardless of the size of the job or the age of the building. While many manufacturers stopped or reduced the use of asbestos, most applications and asbestos products are still not banned and are available for use today. Until such time that asbestos is banned, even new buildings must be included in the inspection process unless data exists that proves asbestos products were not utilized. Uncontrolled releases of asbestos during any type of repair or renovation are forbidden by University policy and are violations of federal and state environmental laws.

The original electronic copies of the inspection reports (with sampling and laboratory data) are filed with the Asbestos Program Manager. Data from historical inspections will be compiled in a directory of shared files that serves as the University's asbestos inspection database. Access to the directory is by authorized personnel only, as identified by the Asbestos Program Manager.

A documented review of the information in this directory of shared files is the first step in the inspection process. Printing copies of the necessary information from this directory can serve as a written documentation of the inspection. If the material that will be disturbed is not listed in this directory, the Asbestos Program Manager should be contacted to request further sampling. According to state and federal regulations asbestos inspections can only be conducted by accredited and licensed asbestos inspectors. The University uses appropriately trained and licensed consultants to conduct asbestos inspections.

It is important to realize that some asbestos-containing materials could exist that have not been identified or sampled. Examples of materials that may not have been sampled include but are not limited to:

- *Thermal system insulation within wall cavities*
- *Construction mastics for weatherproofing or vapor barriers interior to walls or on foundations, especially below grade.*
- *Leveling compounds*
- *Multiple layers of flooring or wall or ceiling systems*
- *Adhesives behind chalkboards and whiteboards*
- *Ceramic tile setting compound and grout*
- *Joint expansion sealants*
- *Fire door and door frame insulation*
- *Gaskets, elevator brakes, and parts of other electrical and mechanical and HVACR systems*

If a material will be impacted that is not found in previous sampling reports, it must be considered a presumed asbestos containing material (PACM) and must undergo the proper testing prior to commencing work.

Abatement

Prior to scheduling asbestos abatement, the following procedures should be implemented.

See **Notification for Building Occupant and Contractor Notification** requirements.

Submit a **Notice of Construction Disruption Form**

All projects must include a Notice of Construction Disruption, which should be filled out for each specific project. The notice must be sent to affected Building Security Coordinators (BSCs), requesting that they forward the notice to all building occupants while copying you for the record. The Asbestos Notification must be included with the Notice of Construction Distribution to the BSC. The notice is a one-time per-project notification that the project manager prepares and sends to the BSC for distribution to building occupants well in advance of a project's start date. A copy of the completed form must be provided to the Asbestos Program Manager.

A listing of BSC's can be found on the BSC website at: <https://cufacilities.sites.clemson.edu/services/bsc>

Construction Notification Sign(s)

Print out and post construction notification signs, one for each entry to a building; laminate the sign to protect the posting throughout the project duration. The current asbestos notification documents can be found at:

<https://cufacilities.sites.clemson.edu/documents/maintenance/Project%20Notification%20Signage.pdf>

Project Close-Out Documentation

Within 30 days of completing site asbestos activities, the Asbestos Program Manager must be provided with project reports from the contractor and consultant, including but not limited to waste manifests, daily site logs, daily sign-in sheets, and air sampling data. Failure to submit this project documentation within 30 days may have contract and payment implications.

Resources

Project Request Form The current Project Request Form is available at: <https://cufacilities.sites.clemson.edu/minor/>

The current Building Security Coordinator listing can be found at: <https://cufacilities.sites.clemson.edu/services/bsc>

The Asbestos Fact Sheet is available at:

<https://cufacilities.sites.clemson.edu/documents/envSafety/Asbestos%20Fact%20Sheet.pdf>

The Current Asbestos Notification Memo Sample and Signage can be found at:

<https://cufacilities.sites.clemson.edu/documents/maintenance/Project%20Notification%20Signage.pdf>

Asbestos procedure for off-campus facilities

The federal and state regulations governing asbestos management apply to all Clemson facilities, regardless of location. Off-campus facilities will use the following procedures.

Operations and Maintenance activities

The performance of maintenance and activities disturbing ACM shall be performed by University staff who have EPA Class III (O&M) training and certification.

Operations and Maintenance (O&M) activities include activities like:

- *Drilling*
- *Nailing*
- *Cutting*
- *Sanding*
- *Scraping*

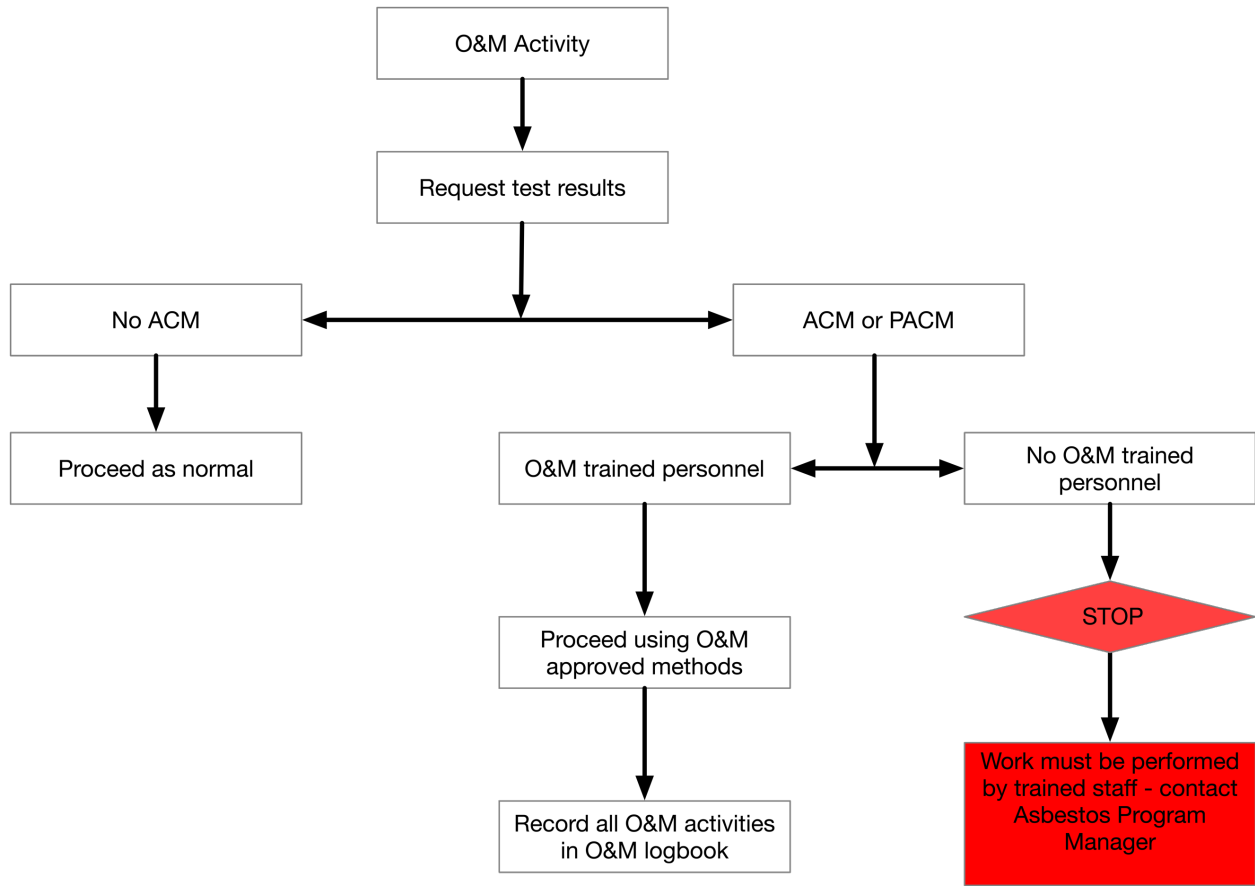
Clemson has already tested the off-campus facilities for asbestos. Prior to any activity which might disturb presumed asbestos containing material (PACM) - even something as simple as putting a nail in a wall - contact the University's Asbestos Program Manager at wnewber@clemson.edu to request a review of the data.

If no asbestos is present, the work may be performed by any employee authorized by Clemson to perform that task.

*If asbestos is present, the work may only be performed by specially trained individuals. Any Clemson personnel wanting to perform any activity that may disturb asbestos **must** have DHEC Asbestos Operations and Maintenance (O&M) training. This not only complies with DHEC requirements, it prevents asbestos exposure. This training is provided free of charge by Clemson OES; any off-campus employee wishing to have O&M training should contact the Asbestos Program Manager at wnewber@clemson.edu. This training must be renewed annually. OES requires at least one person at the off campus facility be certified by SCDHEC for Asbestos O&M work.*

Any and all O&M activities must be recorded and tracked. The Asbestos Project Manager may review these logs periodically.

O&M activity flow chart



Off-campus asbestos abatement

Asbestos abatement is beyond the scope of university staff; no one at Clemson is trained or authorized to perform asbestos abatement.

University Facilities manages all asbestos abatements for Clemson University. Contact Facilities Dispatch to initiate a work order at (864) 656-2186 or online at <https://cufacilities.sites.clemson.edu/services/service-request>.

Appendix A - Procedure for ordering asbestos sampling/testing

- 1) Project Manager or Building Security Coordinator contacts sampling contractor (S&ME) request asbestos sampling and testing. Request must include location to be sampled. Asbestos Program Manager to be copied on requests or notified through RSS feed through AIM.*
- 2) Sampling contractor executes the sampling and analysis within five working days of receipt.*
- 3) Sampling contractor emails pre-liminary results to the Asbestos Program Manager within two working days of receiving results and copies the requesting department/individual.*
- 4) Asbestos Program Manager has two working days to provide results to requesting Department/individual.*
- 5) Once the official sampling report is finalized the sampling contractor has two working days to place it withing the appropriate location in the Asbestos digital archive and to attach the report to the appropriate WO.*

Appendix B - Procedure for ordering asbestos abatement

- 1. Project Manager or Building Security Coordinator contacts appropriate University Facilities Project Manager to request an estimate from the abatement contractor for asbestos removal. Request must include location and materials to be abated. Asbestos Program Manager is copied on the request.*
- 2. PM contacts the abatement contractor to request an estimate. The contractor has 5 working days to develop and provide the estimate to the PM with copy to the Asbestos Program Manager.*
- 3. The PM reviews the estimate and provides the requestor with the information within 5 working days of receiving the estimate from the abatement contractor.*
- 4. The PM creates a work order in AIM to perform the abatement.*
- 5. The PM schedules the abatement with the contractor, and the 3rd party air sampling contractor.*
- 6. The Asbestos Program Manager monitors the work through AiM and site visits as necessary.*
- 7. Once abatement is complete, the abatement contractor puts all abatement documents (SCDHEC abatement permits, waste manifests, invoices, etc.) in the appropriate building folder on the network drive.*
- 8. The Asbestos Program Manager ensures all project documentation is in place prior to the project being closed out for payment*

Appendix C - Work Practices for O&M Work - Penetrating Wallboard Systems containing Asbestos

Introduction

Only approved O&M trained personnel are allowed to penetrate ACM/PACM. Contact OES for the list of approved staff.

These work practices are to be followed whenever drilling or installing nails/screws or other small penetrating objects through known or assumed asbestos containing joint compound where the wallboard system (wallboard, taping and mud together) is known to contain asbestos.

You are not required to test for asbestos prior to penetrating the wall system if you use these procedures.

Testing is still recommended.

This includes activities such as:

- Hanging pictures
 - Installing coat hooks
 - Installing shelving track
 - Earthquake strapping
 - Removal of wall fixtures and furnishings
 - Attaching modular furniture to walls
 - Installing wiremold
 - Screwed in door stops
 - Patching and painting
- Drilling/coring asbestos containing concrete/masonry.

If other work tasks such as **sanding and/or scraping walls, or specifically cutting along asbestos containing drywall seams** are necessary; **they must be done by the asbestos contractor.**

Requirements for O&M Program

Supervisor

- 16-hour Asbestos O&M Training
- Hands on training in shop

For workers

- 16-hour Asbestos O&M Training
- DHEC registration (contact OES)
- Hands on training in shop
- This is a two person procedure

Work requirements

- Wet, non-aggressive methods

- *Prompt clean up of material*
- *Supervisor assurance that all workers have appropriate training*
- *Supervisor verification that current permit is on record, if a permit is required.*
- *Control area*

Equipment

- *HEPA wet/dry Vacuum cartridge type only*
- *Spray bottle or garden sprayer of amended water*
- *Sponge(s)*
- *Plastic waste bag(s)*
- *Plastic sheeting*
- *Paper towels/absorbent pads*
- *Duct tape*
- *Blue masking (painters) tape*
- *Encapsulant*
- *Paint or Killz*
- *Taping compound*
- *Do not enter work area tape*

*Other tools required to complete task: drill, razor knife, saw, screwdriver, Jab saw etc.
 ½ face respirator with high efficiency filters during NEA monitoring.*

PPE

- *Safety Glasses*
- *Foot Protection*
- *Disposable Nitrile Gloves*

Work practices

Note: When building enclosures, painters tape should be used in all instances where tape will be in contact with finished building materials. Duct tape must not be in contact with finished building materials because of the significant damage that it causes.

Work procedure for drilling

*Customers **cannot** be present in rooms where drilling is done. If room cannot be closed a controlled area will be made with tape and no one can enter.*

Air monitoring is optional at the supervisor's discretion.

1. *Gather all required tools at the worksite.*
2. *Assure all training is up to date, and the Asbestos Program Manager is aware of the project.*
3. *Place plastic on the floor next to or under work area and secure with duct tape or painters tape.*
4. *Mark the wall where the penetration is needed.*
5. *Vaseline/shaving cream method*

- a. *Put a dollop of Vaseline/shaving cream on the mark where the penetration will be.*
- b. *Coat the drill bit in Vaseline/shaving cream.*
- c. *Place drill on the mark.*
- d. *Drill hole.*
6. *Set the drill on the plastic on the floor.*
7. *Wipe paper towels wetted with amended water across the area where the hole was drilled, being careful not to release any dust.*
8. *Place the paper towels on the plastic.*
9. *Wet some paper towels and wipe the wall to assure all debris is removed.*
10. *When all drilling is complete, spray the drill with amended water and wipe with a wet paper towel to assure all dust is removed. Pay special attention to the drill bit.*
11. *Wrap waste up in plastic sheeting and secure with duct tape, and place in an asbestos plastic bag then goose necked.*
12. *Put waste in the marked and locked asbestos container located in a specified area. When full notify OES for removal of contents.*

Work procedure for installing nails/screws

Customers **cannot** be present in rooms where nailing is occurring. This also applies to installing drywall anchors.

1. *Gather all required tools at the worksite.*
2. *Assure all training is up to date, and the Asbestos Program Manager is aware of the project.*
3. *Place plastic sheeting on the floor next to work area and secure with duct tape.*
4. *Mark the wall where the penetration is needed.*
5. *Vaseline/shaving cream method*
 - a. *Put a dollop of Vaseline/shaving cream on the mark where the penetration will be.*
 - b. *Coat the nail in Vaseline/shaving cream.*
 - c. *Place nail on the mark.*
 - d. *Hammer nail in place.*
6. *Set the hammer on the paper towels on the floor.*
7. *Wet some paper towels and wipe the wall to assure all dust is removed.*
8. *Wet wipe hammer to assure all dust is removed.*
9. *Wrap waste up in plastic sheeting and secure with duct tape, or place in an asbestos plastic bag then goose necked.*
10. *Put waste in the marked and locked asbestos container located in a specified area. When full notify EHS for removal of contents.*

Work procedure for removing nails/screws/etc.

Customers **cannot** be present in rooms where nailing is occurring. This also applies to installing drywall anchors.

1. *Gather all required tools at the worksite.*
2. *Assure all staff are approved by DHEC (see appendix F)*
3. *Make Asbestos Program Manager aware of the project.*
4. *Place plastic sheeting on the floor next to work area and secure with duct tape.*
5. *Spray the wall with amended water until thoroughly wet.*

6. Gently remove the nail/screw while holding HEPA vacuum on area.
7. Wet some paper towels and wipe the wall to assure all dust is removed.
8. Wet wipe all tools to assure all dust is removed.
9. Wrap the removed nail/screw and wet wipes up in plastic sheeting and secure with duct tape, and place in an asbestos plastic bag.
10. Turn the waste over to ES for placement in the asbestos waste container.

Work procedure for removal of sections of wallboard

This procedure applies to removal of 6"x6" sections or smaller.

*Customer **cannot** be present in rooms where sections of wallboard are removed.*

*This is a minimum **two-person** work practice.*

1. Gather all required tools at the worksite.
2. Ensure all training and work procedure training is up to date and the Asbestos Program Manager is aware of the project.
3. Place plastic sheeting on the floor next to work area and secure with duct tape.
4. Mark the area of wall to be removed.
5. Spray wall surface with amended water.
6. Begin cutting, having another person periodically spray the area where the blade is penetrating while holding the end of the HEPA vacuum to the area being cut.
7. When cutting is complete, spray amended water around penetration.
8. Gently remove the section of wall system as a whole piece.
9. Set removed wall material on plastic, wrap and duct tape or place in an asbestos plastic bag.
10. Spray edges of remaining wall opening with encapsulant.
11. Wet wipe tools to assure all dust is removed.
12. Wrap waste up in plastic sheeting and secure with duct tape, or place in a plastic bag.
13. Put waste in the marked and locked asbestos container located in a specified area. When full notify EHS for removal of contents.

Work procedure for patching penetrations

Never sand exposed asbestos taping compound. Never conduct any activity which disturbs only the taping compound. When scoring, never cut through all the paint layers.

1. Gather all tools at the worksite.
2. Ensure all training and work procedure training is up to date and the Asbestos Program Manager is aware of the project.
3. Place plastic on the floor next to the work area and secure with duct tape.
4. Ensure all fixtures have been removed from the wall, exposing holes (wire mold, modular furniture, etc. – refer to removal section).
5. Encapsulate affected area with paint or encapsulant.
6. Use hammer to drive any toggle bolt anchor, etc., below surface.
7. Re-encapsulate affected area.
8. Fill hole with patching compound and wet sand area.

9. Let dry and paint.

Work procedure for patching glue damage or extensive wall damage

Repairing when sections of wall do not have to be removed.

1. Gather all tools at the worksite.
2. Ensure all training and work procedure training is up to date and the Asbestos Program Manager is aware of the project.
3. Place plastic on the floor next to the work area and secure with duct tape.
4. Encapsulate affected area with paint or encapsulant.
5. If paper is torn but no taping compound is present on paper to be removed, paper can be cut off. Contact Asbestos Program Manager with any questions.
6. If taping compound is present on torn paper, encapsulate area. DO NOT REMOVE PAPER.
7. If paper with taping compound needs to be removed or repairing large holes, refer to "Procedure for Removal of Sections of Wallboard". Once this is done, "California Patch" or other repair can be done.

Work procedure for label removal

1. Gather all required tools at the worksite.
2. Assure all training is up to date, and the Asbestos Program Manager is aware of the project.
3. Place plastic sheeting on the floor next to work area and secure with duct tape.
4. Mist with amended water.
5. Use scraper to remove label, being careful not to penetrate paint layers.
6. If taping compound is damaged, stop work and contact Asbestos Program Manager .

Procedure for HEPA vacuum cartridge replacement

1. Gather all HEPA wet/dry vacuums used for this work.
2. Determine if vacuum/cartridge is full and needs replaced.
3. Contact JBR to come and replace any cartridges for vacuums that are full or near full.
4. Once JBR finishes, return the vacuums to service.

Supervisor checklist

- Current O&M training for all participants
- Notify Asbestos Program Manager of project details (date, location, etc.). Email okay.
- Building Permit, if necessary
- Knowledge of work procedure
- HEPA wet/dry Vacuum
- Spray bottle or garden sprayer of amended water
- Sponge(s)
- Plastic waste bag(s)
- Plastic sheeting
- Paper towels/absorbent pads
- Duct tape
- Blue masking (painters) tape

- *Encapsulant*
- *Paint or Killz*
- *Taping compound*
- *Tyvek suit*
- *Other tools required to complete task: drill, razor knife, saw, screwdriver, etc.*
- *Provide Asbestos Program Manager contact number to workers*
- *Air monitoring (if required)*

Appendix D - University Work Practices for access to the space over a drop ceiling

Introduction

Drop ceilings are common in Clemson buildings, but in some of our older structures there is asbestos containing materials (ACM) present above the drop ceiling. Depending on the age and condition of the ACM, asbestos containing dust may have settled on the back of the ceiling tile.

Before entering the space above a ceiling tile Clemson employees must confirm there is no ACM contamination present.

Requirements

Certified Asbestos Supervisor not required.

For workers

- 16-hour Asbestos O&M Training

Work practice

Before moving a ceiling tile, call in a work order to University Facilities (656-2186) to have the space evaluated by the University's testing contractor. This evaluation is free – no account number is needed.

The contractor will evaluate the materials in the space for ACM, verify there is no ACM dust on the back of the ceiling tile, and sample the air to verify no airborne asbestos fibers.

If NO ACM contamination is present

University employees may proceed with the work as planned.

If ACM contamination IS present

University employees may NOT proceed with the work as planned. The space must be decontaminated or abated before University employees can access the space. This cost is NOT covered by University Facilities or OES.

Once the area has been abated, work may proceed as planned.

Alternately the work may be performed by the University's asbestos abatement contractor. This cost is NOT covered by University Facilities or OES.

Supervisor checklist

- Current O&M training for all participants
- Notify Asbestos Program Manager of project details (date, location, etc.). Email okay.
- Building Permit, if necessary
- Work order for evaluation initiated
- Asbestos is either not present, or has been abated

Appendix E – Definitions

Abatement - Procedures to control fiber release from regulated asbestos-containing materials. This includes removal, enclosure, encapsulation, repair, and any associated preparation, clean up and disposal activities having the potential to disturb regulated asbestos-containing material.

Asbestos - The asbestiform varieties of serpentine (chrysotile), riebeckite (crocidolite), cummingtonite-grunerite (amosite), anthophyllite, and actinolite-tremolite.

Asbestos containing material (ACM) - Material containing asbestos of any type, either alone or mixed with other materials, in an amount greater than one percent (1%) as determined by using the method specified in 40 CFR Part 763, Appendix A, Subpart F, Section 1, as amended, or an accepted equivalent. (NOTE: "Appendix A to Subpart F" has been redesignated as, and shall hereinafter be referred to as, "Appendix E to Subpart E" - 60 FR 31917, June 19, 1995.)

Asbestos Project - Any activity associated with abatement including inspection, design, air monitoring, in-place management, encapsulation, enclosure, renovation, repair, removal, any disturbance of regulated asbestos containing materials (RACM), and demolition of a facility.

Category I nonfriable asbestos containing material (ACM) - Nonfriable asbestos or nonfriable asbestos-containing packing, gaskets, and resilient floor covering; and asphalt roofing products containing greater than one percent (1%) asbestos as determined using the method specified in 40 CFR Part 763, Appendix E, Subpart E, or an accepted equivalent.

Category II nonfriable ACM - Any material that cannot, when dry, be crumbled, pulverized, or reduced to powder by the forces expected to act upon it in the course of demolition or renovation operations, excluding Category I nonfriable ACM and containing greater than one percent (1%) asbestos as determined using the methods specified in 40 CFR Part 763, Appendix E, Subpart E, or an accepted equivalent.

Class I Asbestos Work: the removal of ACM or PACM thermal system insulation and/or surfacing material

Class II Asbestos Work: the removal of any ACM which is not Class I. Examples include, but are not limited to, floor tile, ceiling tiles, glues/mastics, wallboard and joint compounds, gaskets, linoleum, etc.

Class III Asbestos Work: repair and maintenance operations where asbestos is likely to be disturbed (see the definition of "disturbance").

Class IV Asbestos Work: Maintenance and custodial activities during which employees contact but do not disturb ACM or PACM.

Contractor - Any individual, partnership, corporation or other business concern that performs asbestos abatement but is not a permanent employee of the facility owner.

Demolition - Wrecking or taking out any load-supporting structural member of a facility together with any related handling operations, the burning of any facility, or moving of a structure.

Disturbance - is defined by OSHA to mean activities that disrupt the matrix of ACM or PACM, crumble or pulverize ACM or PACM, or generate visible debris from ACM or PACM. Disturbance includes cutting away small amounts of ACM or PACM, but can also include entering mechanical spaces including but not limited above suspended ceilings where spray-on fireproofing is present, attics, crawl spaces, mechanical rooms, and wall cavities/interstitial spaces.

Excursion Limit (EL) - A level of airborne fibers specified by OSHA as a short term excursion level. It is currently 1.0 fiber per centimeter (f/cc) of air, 30-minute time-weighted average, as measured by phase contrast microscopy.

EPA - United States Environmental Protection Agency.

Friable asbestos containing material - Any material that, when dry, can be or has been crumbled, pulverized, or reduced to powder and contains greater than one percent (1%) asbestos as determined using the method specified in 40 CFR Part 763, Appendix E, Subpart E, as amended, or an accepted equivalent.

Glovebag - means not more than a 60 x 60 inch impervious plastic bag-like enclosure affixed around an asbestos-containing material, with glove-like appendages through which material and tools may be handled.

HEPA vacuum - means a vacuum cleaner which has been designed with a high-efficiency particulate air (HEPA) filter as the last stage of filtration. A HEPA filter is a filter that is capable of capturing particles of 0.3 microns with 99.97% efficiency. The vacuum cleaner must be designed so that all the air drawn into the machine is expelled through the HEPA filter with none of the air leaking past it.

High Efficiency Particulate Air (HEPA) - A type of filter which is 99.97% efficient at filtering particles of 0.3 microns in diameter.

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

Negative Exposure Assessment (NEA) – A demonstration that employee exposure during an operation is expected to be consistently below the OSHA Permissible Exposure Limit (PEL). “NEA Tasks” are those that have been determined by the Clemson ES, via personal air sampling, not to pose a risk of exposure above the OSHA exposure threshold limits.

Non-friable Asbestos Containing Material - materials in which asbestos is bound in a matrix which cannot, when dry, be crumbled, pulverized or reduced to powder by hand pressure (such as floor tile and asphaltic building materials). When the bond fails, or is disturbed, the materials become regulated as friable.

Operation and Maintenance (O&M) activity - The disturbance of regulated asbestos-containing material only when required in the performance of an emergency or routine maintenance activity that is not intended solely as asbestos abatement

OSHA - Occupational Safety and Health Administration.

Permissible Exposure Limit (PEL) – The regulatory limit on the amount or concentration of a substance in the air. The OSHA PELs for asbestos are defined as 0.1 fibers per cubic centimeter (f/cc) as an 8-hour time weighted average (TWA) exposure, and 1.0 f/cc as a 30 minute excursion limit.

Presumed Asbestos Containing Material (PACM) – OSHA regulations define PACM as follows. Thermal system insulation and surfacing material found in buildings constructed no later than 1980 is presumed to contain asbestos until proven otherwise. Asphalt and vinyl flooring material installed no later than 1980 must also be considered as asbestos containing unless the employer determines that it is not asbestos-containing. Beyond this OSHA definition, most “best practices” refer to PACM as any material or product that has a history of being made with asbestos at some point in time and which in a particular application has not yet been sampled and analyzed for asbestos identification. If the employer/building owner has actual knowledge, or should have known through the exercise of due diligence, that other materials are asbestos containing, they too must be treated as such.

Regulated Area - means an area established by the employer to distinguish areas where airborne concentrations of asbestos exceed or there is a reasonable possibility that they may exceed the permissible exposure limits.

Renovation - Altering a facility or one or more facility components in any way, including the stripping or removal of PACM from a facility component. Operations in which load-supporting structural members are wrecked or taken out are demolitions.

Appendix F – Operations and Maintenance (O&M) license

Clemson University is required by the state of South Carolina to have a license that permits certain employees to perform work around asbestos. As of January 2021 the list of Clemson employees authorized as O&M workers is as follows:

<i>Joseph Adam</i>	<i>Timothy Evans</i>	<i>Rodney McMahan</i>
<i>Chris Addis</i>	<i>Jonathan Fink</i>	<i>Larry Miller</i>
<i>David Alexander</i>	<i>Steve Fisher</i>	<i>Larry Miller</i>
<i>Kelly Alford</i>	<i>Chris Fleicher</i>	<i>John Morgan</i>
<i>Evan Anderson</i>	<i>Dustin Forrester</i>	<i>Dennis Nash</i>
<i>Michael Andrew</i>	<i>Butch Fortner</i>	<i>Dennis Nash</i>
<i>Joshua Ashley</i>	<i>Ryan Foster</i>	<i>Greg Nichols</i>
<i>Carl Austin</i>	<i>Benjamin Gajdalo</i>	<i>Timothy Nix</i>
<i>Byron Balch</i>	<i>Mitch Garrett</i>	<i>Marlin Norris</i>
<i>Nicholas Banks</i>	<i>Allan Garrett</i>	<i>Kyle O'Kelley</i>
<i>Donald Bennet</i>	<i>Terry Green</i>	<i>Stan Osowichi</i>
<i>Michael Blackwell</i>	<i>Jonathan Greene</i>	<i>Mike Owens</i>
<i>Dylan Blackwell</i>	<i>Eric Hand</i>	<i>Herb Parham</i>
<i>Travis Boiter</i>	<i>Tim Hendrix</i>	<i>William Patterson</i>
<i>Jared Bonnema</i>	<i>Charles Henry</i>	<i>Gary Pelfrey</i>
<i>Ben Bottoms</i>	<i>Roger Herron</i>	<i>Joseph Peter</i>
<i>Kenneth Boyter</i>	<i>Mark Hester</i>	<i>Ross Phillips</i>
<i>Stephen Brant</i>	<i>Dennis Holt</i>	<i>Charles Poole</i>
<i>Jason Briggs</i>	<i>William Hoppe</i>	<i>Jonathan Reed</i>
<i>Robbie Briggs</i>	<i>John Howard</i>	<i>Andy Riggins</i>
<i>Ricky Brown</i>	<i>Mark Hudson</i>	<i>Zack Roach</i>
<i>Joshua Brown</i>	<i>Mathew Hunter</i>	<i>Timothy Roper</i>
<i>Kennon Burgess</i>	<i>Dustin Ian</i>	<i>Dennis Sanders</i>
<i>Odean Bush</i>	<i>Jennifer Jacks</i>	<i>Kyle Schultz</i>
<i>Zachary Cannon</i>	<i>Howard James</i>	<i>Roy Smith</i>
<i>John Charles</i>	<i>Leonard Joe</i>	<i>Daniel Springs</i>
<i>Jacob Chase</i>	<i>Adam Justice</i>	<i>Sean Stapleton</i>
<i>Roger Cobb</i>	<i>Brad Justice</i>	<i>Jonathan Sturner</i>
<i>Steven Cody</i>	<i>Joseph Kassab</i>	<i>Dustin Thomson</i>
<i>Russ Coker</i>	<i>Larry Kastner</i>	<i>Dwight Watson</i>
<i>William Cox</i>	<i>Jay Kaufman</i>	<i>Tommy Watt</i>
<i>James Crunkleton</i>	<i>Don Keasler</i>	<i>Greg Weitz</i>
<i>Joseph Deshon</i>	<i>Daniel Lee</i>	<i>Brett Wells</i>
<i>Anthony Dickson</i>	<i>Brady Massey</i>	<i>Mark Whitmire</i>
<i>James Dillard</i>	<i>Lane Mauldin</i>	<i>Larry Wilbanks</i>
<i>Robert Dover</i>	<i>Daniel McAnulty</i>	<i>Craig Williamson</i>
<i>Dennis Driscoll</i>	<i>Lisa McElveen</i>	<i>Mark Wilson</i>
<i>Brad Erickson</i>	<i>Mark McJunkin</i>	



South Carolina
Department of Health and Environmental
Control
Asbestos Abatement License

This Certifies That

Clemson University

has met the requirements of South Carolina Regulation No. 61-86.1 for licensing in
the category of:

Group

The holder of this license shall comply with all applicable requirements of said
regulation. This license is not transferable and shall expire one year from the date
shown below.

A handwritten signature in black ink that reads "Jennifer Lynn Boryk". The signature is fluid and cursive, with the first letters of each name being capitalized and prominent.

Jennifer Lynn Boryk
Program Manager, Asbestos
Bureau of Air Quality

DATE: **July 27, 2020**

LICENSE NO: **GR-000072**

This license is the property of the Department and must be surrendered on demand. Contractors must post a copy
of this license in a conspicuous place at each worksite.

Issued by: **Laura Fredrickson**