Asbestos Management & Control Program



DARTMOUTH

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Section 1 Introduction

Asbestos is a general name for a group of naturally occurring minerals composed of small fibers. These fibers are extraordinarily strong and resistant to heat and chemicals. Asbestos is common in many materials used in building construction and was added to many older building materials (common prior to 1980), including spray-on fireproofing, floor tiles, ceiling tiles, insulation on pipes and ducts, acoustic and decorative coatings, caulking, window glazing, and roofing materials. Since some building materials after 1980 contain asbestos, these building materials are presumed to contain asbestos unless testing has proven otherwise. Due to their age, many buildings owned or operated by Dartmouth College contain asbestos building materials.

The presence of asbestos in a building does not mean that the health of the building occupants is endangered. When left intact and undisturbed, asbestos-containing materials (ACM) do not pose a health risk to building occupants. There is, however, potential for exposure when the material becomes damaged or disturbed. Unauthorized removal or disturbance of asbestos is not only dangerous but also illegal. When materials are damaged or disturbed, asbestos fibers can become airborne and pose an inhalation hazard. Studies have shown that individuals exposed to asbestos fibers over an extended period may develop health effects such as lung cancer and asbestosis (scarring of the lungs).

The Environmental Protection Agency (EPA) recommends an in-place management program for existing asbestos materials. The EPA only requires asbestos removal in order to prevent public exposure to asbestos, such as during building renovation or demolition. Dartmouth College maintains an in-place management program. This program ensures that the day-to-day management of the building minimizes the release of asbestos fibers into the air, and ensures that when asbestos fibers are released, either accidentally or intentionally, proper control and clean-up procedures are implemented. To follow this guideline, Dartmouth College's management program involves identifying existing asbestos, removing it if damaged, and maintaining it in place if in good condition.

Section 2 Applicable Regulatory Requirements and Guidelines

Asbestos is regulated by the Environmental Protection Agency (EPA), the Occupational Safety & Health Administration (OSHA), and the State of New Hampshire Department of Environmental Services (NHDES). Dartmouth College is required to comply with all State and federal laws and related statutory requirements.

Regulations
This program contains the practices and procedures required to comply with the following regulations:

Title 29 CFR 1910.1020	Access to Employee Exposure and Medical Records
Title 29 CFR 1910.1001	General Industry Asbestos Regulations
Title 29 CFR 1910.1200	Hazard Communication
Title 29 CFR 1910.145	Specifications for Accident Prevention Signs and Tags
Title 29 CFR 1926.1101	Construction Standard Asbestos Regulations
Title 40 CFR Part 61, Subpart A	National Emissions Standard for Hazardous Air Pollutants (NESHAPs) General Provisions
Title 40 CFR Part 61, Subpart M	NESHAPS Asbestos Provisions
Title 49 CFR Part 171 and 172	Hazardous Substances

NH Title X, RSA 141-E	Asbestos Management and Control
NH Env-A 1800	Asbestos Management and Control
NH Env-Sw 900	Management of Certain Wastes

Section 3 Purpose and Scope

The purpose of the Asbestos Management and Control Program (AMCP) is to summarize Dartmouth College's asbestos management and procedures. The Program's goal is to prevent the release of asbestos fibers, protect employees, students and visitors, and ensure that Dartmouth College is in compliance with state and federal regulations.

Dartmouth uses a comprehensive approach to managing materials in place unless there is a need to disturb them. Renovation or demolition that has the potential to disturb ACM or requiring removal of any asbestos-containing materials must be conducted by approved methods based on the requirements outlined by the EPA, OSHA and the New Hampshire Department of Environmental Services (NHDES). In accordance with federal and State requirements, Dartmouth College presumes that all buildings owned by the College potentially contain asbestos-containing building material (ACBM), until and unless further testing and sampling demonstrates otherwise.

The Program sets forth Dartmouth College's procedures and practices for managing asbestos, including the planned or accidental disturbance of asbestos, and exposure to asbestos. The Program is intended to meet applicable State and federal regulations, including the asbestos standards set forth by the Occupational Safety and Health Administration (OSHA) in 29 CFR 1910.1001 and 29 CFR 1926.1101 and by the NH Department of Environmental Services at NHCAR ENV-A 1800.

The Program scope applies to all buildings, facilities, and structures owned, leased, and/or operated by Dartmouth College where ACM and presumed asbestos-containing materials (PACM) may be present.

This Program applies to:

- All Dartmouth College employees (including all faculty, staff, maintenance, custodial, and administrative personnel).
- Contractors, vendors, and consultants who perform work on Dartmouth College properties.
- Students and visitors who may encounter ACM.

The scope includes identifying, documenting, monitoring, maintaining, handling, and abating ACM across the campus. It also outlines procedures for communication, training, recordkeeping, emergency response, and safe work practices to prevent asbestos exposure.

Section 4 Definitions

Definitions are provided in Appendix A.

Section 5 Roles and Responsibilities

The Program's roles and responsibilities are identified and delineated in this section. The success of the Program relies on and charges Dartmouth College employees, students, and contractors to adhere to and provide full support for the Program.

5.1 Environmental Health and Safety (EHS)

- Oversee Dartmouth College's Asbestos Management and Control Program (AMCP)
- Designate an EHS employee as the Asbestos Program Manager (APM) to manage the AMCP at Dartmouth College.
- Act as a resource for information regarding the management and control of asbestos to employees and supervisors.
- Determine appropriate action to be taken in case of an emergency involving ACM or PACM.

5.2. Asbestos Program Manager (APM)

- Manages the AMCP, provides periodic updates, and notifications to staff of the policy availability and content.
- Assist with the development, maintenance (when applicable), and review of asbestos-related Standard Operating Procedures (SOP).
- Maintain qualifications as an asbestos 'competent person.'
- Conduct asbestos identification activities. Coordinate analysis of various suspect materials.
- Investigate asbestos concerns of students, faculty, staff, building occupants, and visitors.
- Maintain records of all building surveys, material sampling, training, abatement activities, air monitoring, and negative exposure assessments. Including hazardous material summary reports. Hazardous material records will be shared with Dartmouth College's Engineering Documents Office, Project Management, and Planon.
- Collect and maintain close-out documents of asbestos abatement projects from asbestos abatement and consultants (sampling, confirmation of completion, waste manifests).
- Provide technical reviews of reports, project design, and specifications for asbestos abatement.
- Evaluate asbestos abatement contractors and consultants in coordination with the Campus Services Contract Management office. The list of vetted contractors and consultants with master service agreements (MSAs) will be reviewed at least every five years.
- In coordination with entities that oversee abatement contracts (Project Management, FO&M, REO, Facility Managers, etc.) approve or deny regulatory variance requests from contractors.
- Periodically monitor activities at asbestos abatement job sites for compliance with applicable regulations.
- Meet with regulatory agencies for inspections and asbestos-related inquiries related to Dartmouth College properties.
- Maintain the NHDES annual notification permit for small-scale, short-duration projects.
    - Submit the annual asbestos notification to NHDES at least 10 working days prior to the start of each calendar year.
    - Manage, collect, review, track, and report asbestos waste manifests.
- Notification and communications of the following occurrences:
    - Inspections from state or federal agencies regulating asbestos.
    - Annual asbestos notification request and quarterly updates to NHDES.
- Coordinate with EHS Industrial Hygienist to manage asbestos exposure assessments, respiratory protection, and the Medical Surveillance Program.

- Coordinate with the EHS Industrial Hygienist to document and retain records for all employees who conduct asbestos work, including medical monitoring, exposure monitoring (if necessary), and employee training.
- Provide and/or coordinate asbestos awareness and work-specific training to Dartmouth College personnel requiring training.
    - Review general and work-specific task training with identified employees.
    - Provide initial and annual asbestos awareness training to Facilities, Operations and Maintenance (FO&M), Project Management Services, Professional School Facilities, and Custodial employees.
    - Provide initial and annual training to individuals who review and approve asbestos work (Program Managers, FO&M, Facility Managers, and APM).
    - Provide initial general awareness training for employees and students.
- For required asbestos training courses EHS cannot provide, the APM will advise on the selection of approved training programs that meet state and federal requirements.
- Conduct routine EHS audits and advise supervisors of each work area regarding deficiencies and corrective actions.

5.3 Asbestos Inspectors

- Maintain a valid New Hampshire asbestos inspector license.
- Complete sampling in a manner that is sufficient to categorize materials. This will occur before the start of the planned work that will disturb materials.
- Conduct sampling using standard practices to prevent fiber release. See Appendix H.
- Utilize an accredited laboratory for sample analysis.
- Maintain accurate and accessible records, to include linking historical and current surveys to building floor plans and filing with the Engineering Documents Office and Planon.
- Provide updates to the APM for verification of or deviation from Program compliance.
- Assist the APM in Program and organizational audits to evaluate Program compliance.
- Assist the APM with delivering asbestos training to Dartmouth College employees.
- Manage and communicate to APM information related to employee concerns regarding ACM or PACM, and the AMCP.

5.4 Facilities Operations & Maintenance (FO&M), Facility Managers, & Real Estate Office (REO)

- Assure that information and procedures contained within this Program are followed by all personnel.
- Notify the APM when new employees are hired so they may be trained to the appropriate level depending on job duties.
- If an employee performs housekeeping activities or otherwise works around ACM or PACM, ensure they receive initial two-hour asbestos awareness training and annual refresher training.
- Contact the APM (email: asbestos@dartmouth.edu) or Facilities Customer Service to arrange testing of suspect materials encountered during routine operations that will disturb existing building materials. See Appendix B.
- **Immediately** contact the APM and Facilities Customer Service if an employee reports that ACM has been discovered in a damaged state or was accidentally disturbed.
- Ensure that authorized employees are following proper work procedures while handling ACM based on their job duties and training (See Appendices B-F).
- Monitor areas of known friable ACM materials for condition at least annually. If ACM is not in good condition, report this to Facilities Customer Service for repair or abatement, and/or hire a

Dartmouth College-approved licensed abatement contractor to repair or abate as soon as practicable.

5.5 Project Managers, Facility Managers, and Supervisors who oversee Asbestos Projects

- Coordinate with the APM when renovations and demolition are planned to obtain existing asbestos surveys and to determine what level of project design and specifications documents may be required.
- Use only Dartmouth College vetted asbestos abatement consultants to perform asbestos consulting activities.
- Use only Dartmouth College vetted asbestos abatement contractors to perform asbestos abatement activities.
- Review, and/or request any assistance from the APM to review, notifications regarding asbestos abatement projects and waste disposal.
- **Immediately** stop the work if additional ACM or PACM materials are encountered at a work site and contact the APM.
- Assist APM in stopping work at abatement sites if requested.
- Notify the APM of any asbestos-related incidents at Dartmouth College construction sites.
- If a regulatory agency requests to see an abatement work area, **immediately** contact the APM to be present.
- Provide the APM with a copy of all building material surveys, air sampling results, waste manifests, and close out documents from abatement activities upon receipt from the abatement contractor. Share the building materials survey and close out documents with the Dartmouth College Engineering Documents Office and Planon Office.
- Complete all required initial and annual asbestos training requirements.

5.6 Procurement and Campus Services Contract Management Office

- Verify asbestos abatement and consultant contracts include language to meet the requirements in this Program.
- Verify that purchase orders include language not to purchase ACMs without coordination and approval from the APM.
- Campus Services Contract Management Office (CS CMO) shall be responsible for coordinating asbestos notices with external entities providing work or services at Dartmouth College. Duties of CS CMO include:
    - Maintain language in contract documents notifying applicable contractors and vendors of the presence of asbestos in Dartmouth College buildings and the requirements concerning replacement of building materials.
    - Maintain language that all Dartmouth College, state, and federal asbestos requirements must be met in all general building, asbestos abatement, and asbestos consulting contracts.

5.7 Department of Human Resources, New Employee Orientation

In coordination with the APM, ensure new employees receive notice of the existence of ACM at the campus and the availability of the Asbestos Management and Control Program.

5.8 Supervisors of Asbestos Workers

- Notify the APM when new employees who will work with asbestos are hired.
- Contact EHS to enroll employees in the Respiratory Protection Program and Medical Surveillance Program as determined by their duties.

- Ensure employees under their supervision complete asbestos awareness training.
- Ensure task-specific training is completed prior to any work in areas containing ACM. For example, if an employee performs housekeeping or otherwise works around ACM or PACM, ensure they receive an initial two-hour asbestos awareness training prior to beginning this work.
- Identify any new operations including ACBM, that may constitute Class I, II or II work, and notify the APM. (See Section 9.1 and Appendix A for definitions of Classes).
- Verify that ACM is not disturbed unless authorized and performed by qualified personnel.
- Verify proper work practices are followed, including use of wet methods, HEPA-filtered vacuums, and appropriate containment measures (where applicable).
- Confirm that respiratory protection and protective clothing are available, maintained, and properly used. If employees are required to wear respirators, they must be enrolled in the respiratory protection program and have proper training. Please contact EHS for more information.
- Communicate asbestos hazards to employees in the work area.
- Report suspected or accidental releases to the APM and facility manager immediately.
- Coordinate annual air sampling with the APM to keep Negative Exposure Assessments (NEAs) current.
- Notify the APM of projects to remove ACM flooring material (See Appendix D), including the date(s) of removal, specific location, amount removed, and where the waste was taken.

5.9 Asbestos Workers

- Complete required initial and annual training to maintain certification based on asbestos-related duties.
- Follow safe work practices for asbestos work within the scope of training (See Appendix D-F).
- Maintain access restrictions and post signage, where required.
- Wear required PPE.
- Stop work and report unsafe work conditions to your supervisor and EHS.

5.10 Employees working at Dartmouth College – Non-Asbestos Workers

All faculty and staff are required to perform the duties of their position(s) in a manner that avoids the uncontrolled release of asbestos fibers and shall limit their work in accordance with the safety provisions of this Program. At no time shall an employee of Dartmouth College disturb or alter ACM without proper authority and implementation of the appropriate asbestos control measures.

- Do not clean, damage, disturb, or remove ACM unless trained and authorized.
- Contact the APM (asbestos@dartmouth.edu) and Facilities Customer Service at 603-646-2508 to have a suspect ACM assessed and categorized. See Para 6.1 and Appendix B.
- Contact the APM and Facilities Customer Service to report suspected asbestos debris or damaged ACM.
- Attend and/or review initial general asbestos awareness training as part of new employee orientation.

5.11 General Contractors and Sub-Contractors

Contractors performing repairs, renovations, remodeling or new construction on Dartmouth College facilities are responsible to:

- Ensure that all employees have received asbestos awareness training including information on the presence, quantity, and location of site-specific materials.
- Follow all aspects of the Dartmouth College Construction Safety Manual including immediately stopping work and contacting the assigned Dartmouth College Project Manager if a previously unidentified ACM or PACM has been disturbed.
- Before the start of work, review hazardous building material reports and information applicable to planned work.
- Communicate hazards, including those related to asbestos work, to all other trades on a project site.
- Do not impact ACM or PACM unless specifically trained and authorized to do so.
- Engage only Dartmouth College vetted asbestos abatement contractors and consultants for asbestos abatement activities.

5.12 Asbestos Consultants

- Follow all provisions of the applicable regulations governing asbestos operations, project-specific asbestos abatement specifications, and this Program.
- Use only individuals currently licensed in New Hampshire as Asbestos Inspectors to perform asbestos sampling and building material condition inspections.
- Use only individuals currently accredited as Asbestos Project Designers to create specifications and/or project documents for asbestos abatement activities.
- Analyze samples at laboratories accredited by the National Institute of Standards and Technology (NIST), National Voluntary Laboratory Accreditation Program (NVLAP) and/or American Industrial Hygiene Association (AIHA), using approved NIOSH methods.
- On-site personnel should have asbestos abatement supervisor and/or other training to qualify as a competent person in the context of asbestos. Additionally, personnel should have satisfactorily completed a NIOSH 582 or equivalent airborne fiber counting course to be able to count asbestos fibers on site, using the phase contrast microscopy (PCM) method.
- Conduct on-site air monitoring in accordance with the NIOSH 7400 method or OSHA reference method, including all QA/QC provisions.
- Observe asbestos abatement work in accordance with all applicable regulations, the project specific specification, and this Program. If non-compliant work practices are observed, the consultant shall take corrective action on-site and notify the APM and the appropriate Dartmouth College Project Manager.
- Provide the Dartmouth College Project Manager and the APM with a copy of all building material surveys, project specifications, air sampling results and close out documents (Appendix G) from abatement activities upon receipt upon completion in accordance with the contract.
- Submit for Dartmouth College MSA consideration through the EHS and CS Contracting vetting process.

5.13 Asbestos Abatement Contractors

- Follow all provisions of the applicable regulations governing asbestos operations, project-specific asbestos abatement specifications, and this Program.
- Receive approval from the Dartmouth College Project Manager and APM before requesting a regulatory variance from any State agency.
- Submit for Dartmouth College MSA consideration through the EHS and Campus Services Contracting vetting process.

Section 6 Building Renovation or Demolition

New Hampshire Code Env-A 1804.01 requires that a thorough inspection be conducted prior to building demolition or renovation. While the NHCAR does not define renovations, it incorporates the EPA's definition in 40 CFR 61.141: 'Renovation means altering a facility or one or more facility components in a way, including the stripping or removal of Regulated Asbestos-Containing Materials (RACM) from a facility component.'

6.1 ACM/PACM Location Assessment (See Appendix B)

When work is scheduled that may impact building materials containing asbestos, the supervisor or project manager should review existing information to determine what is known about the materials. This review must take place prior to disturbing any building materials. If the hazardous building materials report or building-specific summary is either not available or does not contain sufficient detail about building materials, please follow this procedure:

- Send an email to asbestos@dartmouth.edu, with the following information:
    - Scope of work
    - Building address/name and room number where work will take place.
        - Include what this space is used for (classroom, office, etc.)
    - Type of building materials expected to be impacted.
    - Size of area expected to be impacted by the work.
    - Summary of work.
    - Planned timeline for work.
    - A photo showing the work location.

EHS will review the request and review the existing documentation within three business days of receiving the request. There may be situations where EHS lacks sufficient data to determine if a building material contains asbestos. In those cases, EHS will collect samples of the material to be impacted and send them by mail for laboratory analysis. It can take up to five business days to receive results. EHS will provide a written report to the original requester and their supervisor describing the results.
If the material is asbestos-containing and cannot be worked on by trained and authorized Dartmouth College employees, both an abatement contractor and an independent abatement consultant will need to be hired to support the scope of work.

Section 7 General Methods of Compliance

The material presented in this portion of the Program addresses Dartmouth College's specific requirements for asbestos-related work.

7.1 Engineering Controls and Work Practices

The employer shall use the following engineering controls and work practices, and all operations covered in this Program, regardless of the level of exposure:

- A licensed asbestos professional who is qualified shall evaluate the work area and projected work practices and the engineering controls and shall certify through work SOPs that the planned control method is adequate to reduce direct and indirect employee exposure to below the Permissible Exposure Limit (PEL).
- Vacuum cleaners equipped with HEPA filters and shrouds to collect debris and dust containing ACM and PACM, except as provided in Appendix H in the case of roofing materials.

- Wet methods or wetting agents to control employee exposure during asbestos handling, mixing, and removal, cutting applications, and cleanup, except where employees demonstrate the use of what is infeasible, for example, the creation of electrical hazards, equipment malfunctions, with exceptions found in Appendix H of roofing materials.
- Prompt clean-up and disposal of wastes and debris contaminated with asbestos in leak-tight containers or bags, except for roofing materials found in Appendix H.

7.2 Additional Work Practices

- Abate ACM impacted during renovation or other work activities, when practical.
- If a building or portion of a building is demolished, all ACM must be abated, including NESHAP Category I and Category II materials.
- Fire doors containing an asbestos core shall not be modified in any way if contact with or disturbance of the asbestos within the door is required to make the modifications.
- Do not use asbestos-containing lab gloves, wire mesh screens, test-tube holders, or other similar laboratory equipment. Contact the APM for disposal options.
- No material containing asbestos shall be installed on Dartmouth College-owned property. See Paragraph 5.6.
- Materials with greater than one percent will be treated as asbestos-containing for identification, management and disposal reasons per NESHAPS (EPA). ACBMs with any amount of asbestos will be tracked for potential occupational exposures (OSHA Construction Standard, 29 CFR 1926.1101) if they are disturbed.
    - Operations impacting materials that contain any quantity of asbestos require an exposure assessment and applicable work practices to be implemented. Examples of work practices to reduce exposures to asbestos include the use of wet methods, wetting agents, the prompt clean up and disposal of waste in leak tight containers.
    - If either the PEL is exceeded or a negative exposure assessment is not available, all applicable requirements of the OSHA Construction Standard referenced above must be adhered to.
    - There are three potential approaches provided under 29 CFR §1926.1101(f)(2) for producing a negative exposure assessment. They are the use of objective data, previous air monitoring results, or current air monitoring results. If objective data is to be used for the negative exposure assessment, it must clearly demonstrate that employees will not be exposed to asbestos at levels above the asbestos PELs for the conditions and work to be performed. If a negative exposure assessment is to be used for trace asbestos work performed at Dartmouth College, a negative exposure assessment must be documented and available for review by applicable College employees and/or OSHA representatives upon request and retained with project files for a period of 30 years.
- ACM, including vinyl floor tile, mastic/non-ACM, tar-based mastics, rolled vinyl flooring products, pipe insulation, or any other material that has the potential to deteriorate while covered, should be removed in full. Leaving these materials can result in higher costs and could present complications for future projects.
- If ACM is abated via enclosure or encapsulation, specifically designate encapsulated RACM by placing permanent signs, labels, color coding, or some other readily visible mechanism on enclosed or encapsulated RACM to warn individuals who may in the future be required to disturb the material (Labeling of RACM, per NH Env-A 1809.02 and .03).

7.3 Prohibited Work Practices

The following work practices and engineering controls shall not be used for work related to asbestos or for work that disturbs ACM or PACM, regardless of measured levels of asbestos exposure or the results of intimal exposure assessments.

- The use of high-speed abrasive disc saws that are not equipped with a point-of-cut ventilator or enclosed with a HEPA filter exhaust air.
- Compressed air used to remove asbestos or materials containing asbestos from surfaces, including but not limited to calipers, routers, floors, and walls.
- The act of dry sweeping, shoveling, or other dry cleanup of dust and debris containing ACM and PACM.
- The act of cleaning ACM materials with a vacuum not equipped with a HEPA filter.
- Employee rotation as a means of reducing employee exposure to asbestos.
- Use of high-abrasion cleaning pads or sanding on ACM vinyl flooring.
- Cleaning and buffing machines operating at speeds greater than 300 rpm.
- The act of cutting, drilling, sawing, and sanding any ACM surfacing material, including but not limited to plaster, joint compound, drywall, and gypsum board, without a valid and current 16-hour training certification.
- The act of removing ACM vinyl flooring without a valid 8-hour training and annual 4-hour refresher training.

7.4 Periodic Surveillance

Facilities where known ACBM or PACM exist shall have periodic surveillance inspections performed to update material conditions. Periodic surveillance evaluations shall be conducted at regular intervals as needed to ensure the continued safe condition at the facilities. Typically, this involves Facility Managers or representatives visually inspecting the materials at least once a year. If ACBM is not in good condition, it shall be reported to Facilities Customer Service or the Facility Manager for repair or abatement.

7.5 Asbestos Surveys

When a building is scheduled for major renovation or demolition, a Type II survey must be conducted to comply with the National Emission Standards for Hazardous Air Pollutants (NESHAP) requirements. The purpose of this survey is to review the findings of previous surveys and identify any deficiencies. Typical work includes identifying, sampling, and quantifying fire doors, roofing, caulks, glazing compounds, and other materials previously assumed to contain asbestos. Formerly inaccessible spaces such as pipe chases, tunnels, and ceiling cavities must also be evaluated.

Dartmouth College does not have up-to-date comprehensive inventories of all suspected asbestos-containing materials (ACM) in its buildings and facilities. Assume that all building materials are asbestos-containing unless informed by a representative of EHS or you have been provided with a copy of test results showing the suspect materials that are to be disturbed do not contain asbestos. Proper identification of ACM or PACM must be made by an Asbestos Building Inspector who is accredited by NHDES. If these materials must be disturbed, they must be tested for asbestos content. See Appendix G for the asbestos sampling SOP.

7.6 Exposure Assessments and Monitoring

7.6.1. Air monitoring is conducted by an industrial hygienist (IH) or independent consulting firm during Class I-III asbestos work. Monitoring typically consists of samples from the breathing zones of employees performing the work, samples from the area surrounding the regulated area, and clearance

samples after the work is completed. Additional samples will be collected at the discretion of the IH or consulting firm. The consulting firm will perform phase-contrast microscopy (PCM) on-site using the NIOSH 7400 Method (A Counting Rules) to ensure that airborne fiber levels are well within regulatory limits. The data regarding airborne fiber levels and worker exposure levels are maintained by the APM.

- If exposure assessments and monitoring include Dartmouth College Union workers. The employee shall be given the option to have a Union representative present during sampling. Union representatives are not exempt from PPE requirements.
- Dartmouth-affected employees will be notified in writing of the personal air monitoring results within five (5) working days after receiving the laboratory results. It will be the role of the APM, consultant, and/or Industrial Hygienist to communicate this information to affected employees.
- Documentation of these records will be maintained by EHS for thirty (30) years after employment of affected employees.

7.6.2. A Negative Exposure Assessment (NEA) is a demonstration by an employer that an employee's exposure is consistently below the Permissible Exposure Limit (PEL) and Short-Term Exposure Limit (STEL). A negative exposure assessment is job-specific, and the workplace conditions, type and amount of material, asbestos type and percent by weight, control methods, work practices, and environmental conditions must closely resemble those of the activity to be represented. The assessment can be used to show that exposure levels for a given job will be below the PEL so that lower levels of personal protective equipment (PPE) can be used.

7.6.3. Asbestos Abatement Air Monitoring

All Class I and II asbestos abatement projects must include the following air monitoring during operations, regardless of current NEA status. This monitoring is normally performed by the asbestos consultant:

- Representative 8-hour time-weighted average (TWA) exposures will be determined using one or more full-shift samples that reflect employee exposures for each shift, job classification, and work area.
- Representative 30-minute short-term employee exposures will be determined using one or more samples collected during operations most likely to exceed the excursion limit, for each shift, job classification, and work area.
- Perimeter (clean area) sampling from areas adjacent to the restricted areas.
- If negative air machines are exhausted inside the building, the exhaust must be monitored.
- Employee observation: an employee or designated representative shall be provided with the opportunity to observe any personal air monitoring and shall be provided with adequate personal protective equipment and clothing.
- Affected employees will be notified in writing of the personal air monitoring results within five working days after the receipt of the laboratory results.

7.6.4. Final Clearance Monitoring

At the completion of all asbestos removal projects, final clearance monitoring is conducted. As part of the final clearance, independent consulting firms are required to conduct a thorough post-abatement visual inspection in accordance with the current version of ASTM Standard E1368. After a successful visual inspection, representative PCM air clearance samples with a minimum of 1200 liters of air will be collected. These duties are normally performed by the asbestos consultant. Re-occupancy requires visual clearance per ASTM E1368 and PCM air clearance <0.01 fibers/cc.

Aggressive final air clearances, incorporating the use of a box fan and 1-hp blower motor used to agitate the air, must be conducted for all negative pressure enclosures or critical barrier enclosures abatement systems. Passive final air clearances may only be used in abatement systems where a complete enclosure system was not required or used. TEM clearance sampling may be required in unusual circumstances (i.e., dusty environments).

A copy of the final clearance monitoring shall be attached to the project closeout documentation. In addition, it shall be available for all Dartmouth employees upon request when buildings and spaces go back into occupancy. It will be the role of the APM, consultant and/or Industrial Hygienist, to communicate this information to affected employees.

7.7 Respiratory Protection

All Dartmouth College employees assigned to work in Class I-III asbestos work or Class IV work that takes place in a regulated area must be provided with proper protective clothing and respirators. Dartmouth College maintains a respiratory protection program for its employees in accordance with 29 CFR 1910.134. If respiratory protection is required, the employee must be enrolled in the Respiratory Protection Program administered by EHS.

7.8 Housekeeping

All surfaces shall be maintained as free as practicable of ACM waste, debris, and accompanying dust. Surfaces potentially contaminated with asbestos may not be cleaned using compressed air. Do not drill holes, hammer nails into, hang objects from, or move furniture that damages ACM or PACM. Waste, debris, and accompanying surface dust in areas containing accessible and/or visibly deteriorated ACM shall not be dusted, swept, shoveled dry, or vacuumed without using a HEPA filter.

All vinyl and asphalt flooring should be treated as ACM unless evidence exists to prove otherwise. The following restrictions exist for the care of ACM flooring: no sanding is permitted; stripping should be conducted using low-abrasion pads at speeds lower than 300 rpm with wet methods, and burnishing or dry buffing may be performed only on flooring that has sufficient finish, so the pad doesn't contact the flooring material. Broken ACM floor tiles should only be removed by properly trained personnel. See Appendix D and E.

Ceiling tiles should not be moved or replaced until it is confirmed they are not ACM. In buildings where spray-applied surfacing materials are known to exist above drop ceilings, tiles must be decontaminated before they are disturbed. Only trained personnel can replace, decontaminate, or otherwise disturb ACM ceiling tiles or tiles that may be contaminated by ACM surfacing material above.

7.9 Medical Surveillance

Dartmouth College maintains a medical surveillance program for all employees who are engaged in Class I-III asbestos work for a combined total of more than 30 days per year or who are exposed at or above the permissible exposure limit.

Medical surveillance consists of an exam that is offered annually at no charge to affected employees:

- A review of medical and work history.
- A physical exam directed to the pulmonary and gastrointestinal systems.
- A chest roentgenogram interpreted by a NIOSH-certified B Reader.
- Pulmonary function tests.
- Any other tests deemed necessary by the examining physician.

Termination of employment examinations will be provided to affected employees 30 days prior or after the last day of employment at Dartmouth College. No termination medical examination is required if records show the employee was examined in accordance with 29 CFR 1910.1001(l) (2-4) within the last one-year period.

For employees who are otherwise required to wear a respirator, a physician will determine that the employee is able to perform the work and use the equipment.

Section 8 Notifications and Communication

8.1 Building Occupants, Employees, and Contractors

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

- Dartmouth College employees who may work in or adjacent to areas containing these materials, as well as building occupants who may incidentally encounter ACM. Employees are informed during new employee orientation and/or workplace specific training as well as having access to this information by contacting EHS or through Planon. Friable ACM shall also be labeled where able to notify building occupants.
- Contractors hired to work in or adjacent to areas containing ACM. Hazardous Building reports are provided to contractors.

8.2 Notification to New Hampshire Department of Environmental Services (NHDES)

Notifications to NHDES are required before major asbestos abatement projects (NHCAR Env-A 1806,1806.02,1806.03), demolitions (1806.05), and asbestos transport for disposal notifications (1806.07).

- Initial notification of major asbestos abatement projects must be submitted such that the notice and fee are postmarked or received by NHDES at least 10 working days before any asbestos abatement begins.
- For emergency asbestos abatement, Dartmouth College or the abatement contractor conducting work will notify the NHDES with the information required by Env-A 1806.03(a), as early as possible prior to abatement; or if prior notice is not possible, within 24 hours of the beginning of each emergency asbestos abatement activity.
- In addition to the requirements in Env-A 1812.02, the owner or operator transporting ACM for disposal shall:
    - Submit a NHDES-A-01-024 “Asbestos Transport for Disposal Notification” Form
    - Submit the notification form to the NHDES no later than the day on which such transport for disposal begins; and
    - Provide a copy of the notification form to the APM or PM as part of the abatement close out documents.
- See Appendix I for the asbestos abatement notification process.
- The APM will complete and submit the application form for an annual notification permit to NHDES at least 10 working days prior to the start of the new calendar year. The APM will compile and submit quarterly reports to NHDES describing work conducted under the annual notification. Both Dartmouth College projects and asbestos abatement contracts can use the Dartmouth College annual notification. Quarterly reports are due 30 days after the end of each quarter.

8.3 Notification to the Asbestos Program Manager

- Projects that will utilize the annual notification in lieu of the notification to NHDES must inform the APM prior to the start of work, and must provide details about the location, scope, quantity, type of material, disposal facility, abatement contractor, and abatement consultant. Projects with <260 linear feet, <160 square feet or <35 cubic feet of ACM may utilize the annual notification.
- Abatement close out documents must be sent to Dartmouth College EHS Asbestos Program Manager within 15 days of asbestos abatement or inspection completion.
- Notifications to State agencies as detailed in Para 8.2. Copies of subsequent revisions to a notification must also be submitted to the APM.
- Any inspections from State or federal agencies regulating asbestos such as NHDES, OSHA, and EPA.

Section 9 Training

Asbestos training is required for all employees who perform Class I through IV asbestos work (29 CFR 1926.1101 (k)). The training must meet the requirements of the EPA Model Accreditation Plan (MAP) (MAP accreditation adopted by NHDES for licensing) -- AHERA Subpart E does not apply to Dartmouth College. No untrained workers are to disturb any amount of asbestos. No student workers are to disturb any amount of asbestos. Dartmouth College does not provide training to non-college personnel.

9.1 Types of training required by class of work. See Definitions in Appendix A for additional information.

- **Class I asbestos work** - Activities involving the removal of thermal system insulation (TSI) and surfacing ACM and PACM. Certified training for Class I work is either 32-hour (asbestos worker) or 40 hours (contractor/supervisor and functions as a competent person). An annual 8-hour refresher course is required for both the worker and contractor/supervisor competent person level of training.
- **Class II asbestos work** involves the removal of ACM, which is not thermal system insulation or surfacing material. This includes, but is not limited to, removing asbestos-containing wallboard, floor tile and sheeting, roofing and siding shingles, and construction mastics. Training for Class II work may be the same as for Class I work (asbestos worker or contractor/supervisor) or an 8-hour task-specific training which includes hands-on training, such as floor tile removal. An annual refresher is required for all workers.
- **Class III asbestos work** involves repair and maintenance operations, where ACM, including TSI and surfacing ACM and PACM, may be disturbed. Training for Class III work is 16-hours with an annual four-hour refresher course.
- **Class IV asbestos work** involves maintenance and custodial activities during which employees contact but do not disturb ACM or PACM, and activities to clean up dust, waste, and debris resulting from Class I, II, and III activities. Initial two-hour Class IV asbestos awareness training with an annual refresher is required for all custodial, maintenance, housekeeping, and service personnel who work in buildings that contain asbestos. Sign up for initial or annual refresher training through BioRAFT (dartmouth.bioraft.com), the link to BioRAFT can be found on the EHS website (ehs.dartmouth.edu) or by calling EHS at 603-646-1763.
- **General Awareness Training –** all others who are not Class I – IV Asbestos workers but may occupy buildings where asbestos may be present on general knowledge of asbestos and where

to report damaged materials and where to get further information on asbestos at Dartmouth College.

9.2 Dartmouth College Employee Training Requirements

9.2.1. Facilities Operations and Management, REO, and Professional School Facility Management Personnel

- Identified personnel in the approved work areas (REO, reservation operations, building repair shop, etc.), who are trained on Class II, job-specific floor tile removal training, will receive 8 hours of initial training and 4-hour refresher training annually from an NHDES-approved training provider.
- Staff who come in contact with PACM (Class IV work): facilities, maintenance and custodial staff who are not involved with the disturbance of asbestos materials, but who, in the daily course of their duties, may come into contact with ACM shall receive 2-hour Class IV Asbestos Awareness Training upon hire and 1 hour annually thereafter. Sign up for initial or annual refresher training in BioRAFT (dartmouth.bioraft.com).

9.2.2. Environmental Health and Safety (EHS) Personnel

NHDES-approved Asbestos Inspector training and certification are required for any member of the EHS staff who samples building materials for asbestos.

EHS personnel acting as a “competent person” should maintain training and certification an Asbestos Project Designer or Asbestos Management Planner to demonstrate sufficient understanding of the complexities of asbestos within facilities. In addition, EHS personnel should have experience with asbestos work activities, safety procedures and safety processes, an in-depth understanding of buildings and building systems and/or experience with asbestos management.

9.2.3. Project Managers and Facility Managers
Project Managers and Facility Managers shall receive training on their specific roles in the Asbestos Management Program. Training will be provided at onboarding and whenever this Program undergoes material updates.

9.2.4. Employees and Students of Dartmouth College
General awareness training will be provided to all employees and students who are not otherwise listed as a Class II, III or IV asbestos worker but may occupy buildings with ACBM. This will be accomplished during initial orientation and workplace safety training.

Section 10 Emergency Response Procedures

A fiber release episode is any uncontrolled or unintentional disturbance of ACBM resulting in visible emission or debris. Emergency release can occur from damaged building materials, moisture intrusion, construction activities, and accidental disturbance during routine work. The likelihood of an emission depends on the friability of the material as well as the physical condition, which includes the state of deterioration and/or delamination, physical damage, and water saturation. See Appendix C for more details.

Minor fiber release episodes are defined as the falling or dislodging of less than three cubic feet, 10 linear feet, or 25 square feet of friable asbestos, while major fiber release episodes are defined as the

falling or dislodging of greater than or equal to three cubic feet, 10 linear feet, or 25 square feet of friable asbestos.

In the event of a suspected asbestos fiber release episode, the following procedures should be immediately followed:

- Stop the work, evacuate the immediate the room or area.
- Do not attempt to clean the area or any material.
- Exit and secure the room or area.
- Contact EHS 603-646-1762 and Facilities Customer Service 603-646-2508.
- Notify your supervisor.
- FO&M shutdowns the HVAC system serving the area.
- EHS and if needed an environmental consultant(s) will design a response action and engage an asbestos abatement contractor(s), as necessary.
- Do not reenter the area until a representative from EHS gives authorization.
- Certified asbestos workers must perform clean-up.
- In some circumstances, emergency assistance from FO&M employees may be required for the shutdown of systems, including but not limited to plumbing, electrical, HVAC, and Fire Systems. During these events, FO&M workers must use assigned PPE with required training before entering.

Section 11 Disposal of ACM Material

11.1 General Procedures

- Waste scrap debris bags, containers, equipment, cleaning materials, and PPE/clothing contaminated with asbestos, shall be collected and disposed of in a sealed impermeable bag by means of a gooseneck closure.
- All asbestos-containing waste shall be double-bagged with each bag closed separately with a "goose neck" seal. The disposal bags shall be placed in reinforced disposal fiber drums if the bags contain sharp or rigid materials that may tear polyethylene bags. Large components may be wrapped airtight in 2 layers of 6-mil-thickness polyethylene sheeting. In accordance with OSHA (29 CFR 1910.1001(j)), all bags, polyethylene sheeting, drums or other containers holding protective clothing and equipment, scrap, waste, debris, and/or other waste materials containing asbestos fibers must be labeled. Labels shall be affixed to all bags or containers as follows: DANGER, CONTAINS ASBESTOS FIBERS, MAY CAUSE CANCER, CAUSES DAMAGE TO LUNGS, DO NOT BREATHE DUST, AVOID CREATING DUST.
- For Dartmouth College employee performed abatement projects, the designated waste container is located at McKenzie Hall.
- Asbestos waste shall be transported within 30 days of the completion of abatement activities for delivery to a solid waste facility that is permitted to receive asbestos waste.

11.2 Waste Disposal and Transport Procedures

- Upon removal from the work site, asbestos waste shall be transported to a designated location on campus until transport and disposal is provided.
- Asbestos abatement contractors shall store waste in the designated onsite container or transport waste off site and dispose of it in accordance with New Hampshire State requirements.

- The transporter and disposal site shall meet State and federal requirements and be approved by Dartmouth College EHS.
- Provide EPA-required Waste Shipment Record (WSR) for all asbestos-containing waste generated. Waste Manifests (waste shipment records) shall be submitted to the Dartmouth College Project Manager or designated representative overseeing the contract or project.
- WSRs signed by the landfill operator shall be provided to Dartmouth College within 30 days of the waste leaving the job site.
- The abatement contractor and PM will transmit copies of all waste manifests (waste shipment records) to the EHS APM within 30 days of waste removal from campus.
- For all asbestos removal projects and related disposal under the annual notification permit the APM will maintain a certification of receipt of the ACM covered by the waste shipment record by the permitted disposal facility representative.

Section 12 Recordkeeping

12.1. Records

Specific must be maintained regarding asbestos-related activities, including but not limited to:

- Building material sampling reports (inspection reports) and summary reports maintained by the APM in the EHS building file folders. Current sampling data will also be included in Planon.
- Consolidated hazardous building material summary documents will be maintained by EHS and loaded in a campus-wide system, such as Planon.
- The APM will file written notifications to NHDES concerning asbestos abatements on campus.
- For all asbestos disposals originating from Dartmouth College, including asbestos that falls under the annual notification permit, the APM will retain a copy of all waste shipment records for at least five years from the date received at the permitted disposal facility.
- Signed manifests returned from the asbestos disposal facilities shall be maintained by the EHS APM, in the applicable EHS building file folders and Asbestos Program folder.
- Close out documents (see Para 12.2) for all projects managed by FO&M, Project Managers, Professional Schools, or REO will be filled in the applicable EHS Building file folders and/or Asbestos Program folder.
- Training records will be maintained by the EHS APM and Supervisors via BioRAFT.
- Exposure monitoring records will be maintained by the EHS industrial hygienist and APM.
- Medical records are kept on file at Dartmouth Health by the Occupational Medicine office.
- Other records or information as required by this Program or existing regulations shall be maintained by the EHS APM, as necessary.

12.2. Abatement Closeout Documents

After asbestos abatement is complete, the APM shall record and maintain the following information, as applicable, in electronic or paper format, for each asbestos abatement:

- A copy of all notifications and revisions submitted to the NHDES;
- A copy of the waste shipment records and disposal site slips for all RACM taken from asbestos abatement sites on Dartmouth College property.
- A copy of the clearance air sampling and clearance determination; and
- A copy of reports summarizing pre-abatement inspection findings
- A report listing the type of abated material, detailed description of material abated, how it was abated (removed, repaired, encapsulated), detailed location, date of completion, what ACM with

detail description was left in place and its condition. Also shared with Engineering Documents and Planon system.

12.3. Record Retention

Incident reports, abatement project reports, air sampling results, regulatory notifications, remediation records, employee exposure records, and any analyses using exposure or medical records must be preserved and maintained for a minimum of 30 years (29 CFR 1910.1020; OSHA requirement for asbestos exposure documentation), or in the case of. Employee medical records shall be preserved and maintained for the duration of the employee's employment plus 30 years. Inspection reports and analytical reports shall be maintained for the duration of ownership. Properties which are leased or managed shall be maintained throughout the lease period and transmitted to the building owner upon vacating by Dartmouth College.

Section 13 Standard Operating Procedures (SOPs)

The following SOPs are provided to ensure consistent execution of important processes related to this Program:

- ACBM Assessment Process and Diagram, see Appendix B, overview of asbestos assessment process and flow chart including process for requesting asbestos building material sampling
- Emergency Procedures for Uncontrolled Asbestos Fiber Release, see Appendix C.
  This SOP outlines procedures to follow in the event of an incidental release of asbestos or emergency related to asbestos. It includes communication, building or space closure and reopening procedures.
- Abatement and Removal of ACM Vinyl Flooring, see Appendix D, outlines the process for abating ACM vinyl floors by certified Dartmouth College employees including personnel protection and disposal of materials.
- Cleaning of Asbestos-containing or potentially Asbestos-containing Flooring, see Appendix E, overview of how to clean non friable asbestos material and what to do if you find damaged PACMs.
- Monitoring of Roofing Abatement Projects, see Appendix F, overview of process to monitor projects involving the abatement of potentially asbestos-containing roofing materials at Dartmouth College.
- ACBM Inspection and Sampling Procedures (Appendix H. Asbestos Sampling Procedure) outline the standard process Dartmouth College Asbestos Inspectors use to inspect and sample PACM and ACM located in Dartmouth College properties.

Appendix A. Definitions and Acronyms

Abatement – Any portion of an asbestos project that includes procedures to control fiber release from ACM. This includes removal, encapsulation, enclosure, repair, or handling of asbestos material that may release asbestos fibers.

Adequately wet - Sufficiently mix or penetrate a material with amended water to prevent the release of visible emissions. If visible emissions come from asbestos-containing material, the material has not been adequately wetted down.

Aggressive air sampling - An accepted method of sampling in which mechanical equipment is used before and during the sampling period to stir up settled dust/asbestos fibers.

Air sampling - The process of measuring the fiber content of a known volume of air collected during a specific period, using accepted methodologies.

Ambient air sampling - A method of sampling by which an air sample is collected outside the regulated abatement work area without using aggressive air sampling techniques.

Annual Asbestos Notification – An NHDES issued permit to notify NHDES of major asbestos abatement involving less than 260 linear feet of RACM on pipes, 160 square feet of RACM on the surface of structures other than pipes, or 35 cubic feet of RACM on facility components where the length or area could not be measured on an annual basis in lieu of needing to notify NHDES each time an asbestos abatement and disposal occurs. The owner or operator shall submit quarterly reports within 30 days of the end of each quarter, with required information on abatement and disposal of asbestos meeting the above criteria.

Approved Asbestos Safety Training Program - A program, approved by the New Hampshire DES, providing training in the various disciplines that may be involved in an asbestos project.

Asbestos – Includes actinolite, amosite, anthophyllite, chrysotile, crocidolite, tremolite, and any of these minerals that have been chemically treated and/or altered. For this Program, “asbestos” includes PACM, as defined below.

Asbestos abatement contractor - An asbestos contractor, trained and certified, who performs abatement during an asbestos project or employs people performing such abatement.

Asbestos-containing material (ACM) - Any material containing greater than one percent (1%) asbestos.

Asbestos consultant – A contractor, trained and certified to conduct oversight of asbestos abatement activities including bulk and clearance air sampling, and associated reports required by State and federal regulations.

Asbestos inspection – Activity undertaken to determine the presence or location, or to assess the condition of, friable or non-friable f building materials (ACBM) or suspected ACBM, whether by visual or physical examination, or by collecting samples of such material. A thorough inspection for and identification of all PACM, suspect ACM, or asbestos material throughout the building/structure or portion thereof to be demolished, renovated, remodeled, or repaired.

Asbestos Program Manager (APM) – Oversees Dartmouth College’s Asbestos Management and Control Program, annual State notification for small-scale short-duration projects (see annual notification permit), maintains hazardous building material files, maintain qualifications as an asbestos ‘competent person’ and provides or coordinate necessary asbestos training for Dartmouth College staff.

Asbestos waste - ACM, PACM, asbestos material or asbestos-contaminated objects require disposal under applicable laws or regulations. This includes RACM as well as Category I and II Non-Friable ACM.

Bulk sampling - Accepted methods for collecting samples of suspect materials for appropriate analyses by ELAP-approved laboratories, to determine asbestos content.

Category I non-friable ACM - Asbestos-containing packings, gaskets, resilient floor covering, and asphalt roofing products containing more than 1% asbestos that cannot crumble, pulverize, or be reduced to powder by hand pressure when dry.

Category II non-friable ACM - Any material, excluding Category I non-friable ACM, containing more than 1% asbestos that cannot crumble, pulverize, or be reduced to powder by hand pressure when dry.

Class I asbestos work - Activities involving the removal of thermal system insulation (TSI) and surfacing ACM and PACM. Certified training for Class I work is either 32-hours (asbestos worker) or 40 hours (contractor/supervisor and functions as a competent person). An annual 8-hour refresher course is required for both the worker and contractor/supervisor competent person level of training.

Class II asbestos work - Involves the removal of ACM, which is not thermal system insulation or surfacing material. This includes, but is not limited to, removing asbestos-containing wallboard, floor tile and sheeting, roofing and siding shingles, and construction mastics. Training for Class II work may be the same as for Class I work (asbestos worker or contractor/supervisor) or an 8-hour task-specific training which includes hands-on training. A separate 12-hour course for flooring removal that complies with the Flooring Industry Settlement Agreement is also offered. An annual refresher is required for all workers.

Class III asbestos work - Repair and maintenance operations, where “ACM,” including TSI and surfacing ACM and PACM, may be disturbed. Training for Class III work is 16-hours with an annual four-hour refresher course.

Class IV asbestos work - Maintenance and custodial activities during which employees contact but do not disturb ACM or PACM, and activities to clean up dust, waste, and debris resulting from Class I, II, and III activities. Initial two-hour asbestos awareness training with an annual refresher is required for all custodial, maintenance, housekeeping, and service personnel who work in buildings that contain asbestos.

Clearance air sampling - An accepted method of air sampling used upon completion of final cleaning, during Phase IIC of an asbestos project. This method uses aggressive air sampling techniques to dislodge and stir up remaining asbestos fibers, then air samples are collected for appropriate analysis to determine representative airborne fiber concentrations.

Competent person - In addition to the definition in 29 CFR 1926.32 (f), one who can identify existing asbestos hazards in the workplace and selecting the appropriate control strategy for asbestos exposure, who has the authority to take prompt corrective measures to eliminate them, as specified in 29 CFR 1926.32(f).

Disturbance - Any activity that disrupts the matrix of ACM or PACM, or generates debris, visible emissions, or airborne asbestos fibers from ACM or PACM. This includes moving friable asbestos-containing material from one place to another.

Emergency renovation operation or asbestos project - A renovation operation that was not planned but results from a sudden, unexpected event that, if not immediately attended to, presents a safety or public health hazard, is necessary to protect equipment from damage, or is necessary to avoid imposing

an unreasonable financial burden. This term includes operations necessitated by non-routine failures of equipment.

Employee exposure – Exposure to airborne asbestos that would occur if the employee were not using respiratory protective equipment.

Encapsulant - A material that prevents the release of asbestos fibers from the material, either by creating a membrane over the surface (bridging encapsulant) or by penetrating the material and binding its components together and to the substrate (penetrating encapsulant). See Sealant.

Encapsulation - means the application of an encapsulant to ACM to control the release of asbestos fibers into the air, either by using bridging encapsulants, which create a membrane over the surface of the ACM, or by using penetrating encapsulants, which penetrate the ACM and bind its components together.

Enclosure - Abatement consisting of the construction of airtight walls, ceilings and floors between the asbestos material and the building/structure environment, or around surfaces coated with asbestos material, or any other appropriate procedure as determined by the Department of Labor, which prevents the release of asbestos fibers.

Fiber - A particulate form of asbestos, 5 micrometers or longer, with a length-to-diameter ratio of at least 3 to 1.

Friable - Any material that, when dry, can be crumbled, pulverized, reduced to powder, or released into the air by hand pressure.

Glove bag - A manufactured impervious bag-like enclosure constructed of at least six (6) mil transparent plastic, seamless at the bottom, with inward projecting long sleeve glove(s), labeled receptacle or portion for asbestos waste. The glove bag is constructed and installed to surround the object or area to be decontaminated and contain all asbestos fibers released during the abatement process.

HEPA-Filter - A high efficiency particulate air (HEPA) filter capable of trapping and retaining 99.97 percent of all mono-dispersed particles of 0.3 microns in diameter or larger.

HEPA-Vacuum Equipment - Vacuuming equipment designed for abatement, with a high efficiency particulate air filtration system.

Homogeneous area - An area of surfacing material or thermal system insulation that is uniform in color, texture, and presumed application.

Incidental disturbance - The unintentional disturbance of ACM, PACM, or asbestos material.

Intact - Asbestos material that has not crumbled, been pulverized, or otherwise deteriorated, so the asbestos is no longer likely to be bound within the matrix.

Major Asbestos Project - A project involving the repair, removal, enclosure or encapsulation of greater than or equal to 3 cubic feet, 25 linear feet and/or 10 square feet of regulated asbestos-containing materials.

Minor Asbestos Project - A project involving the repair, removal, enclosure or encapsulation of less than 3 cubic feet, 25 linear feet and/or 10 square feet of regulated asbestos-containing materials.

Multi-employer Work Sites - Any demolition, renovation, remodeling or repair project work site, which includes work covered by this part, where more than one employer is reasonably expected to be on-site during the project.

Negative exposure assessment (NEA) - A demonstration by the employer that employee exposure during an operation is expected to be consistently below the Permissible Exposure Limit (PEL).

Non-friable - Any material that, when dry, cannot be crumbled, pulverized, or reduced to powder by hand pressure, and cannot be released into the air by hand pressure, including but not limited to flooring materials, adhesives, mastics, asphalt shingles, roofing materials and caulks.

NESHAP - National Emission Standards for Hazardous Air Pollutants (40 CFR Part 61).

NIOSH - The National Institute for Occupational Safety and Health.

OSHA - The Occupational Safety and Health Administration.
Operations and Maintenance Plan (O&M) – Specific procedures and practices developed for the interim control of asbestos-containing materials in buildings until it is removed.

Permissible exposure limit (PEL) – The maximum allowable exposure to asbestos at 0.1 fibers per cubic centimeter of air as an eight-hour time-weighted average.

Presumed asbestos-containing material (PACM) - All thermal system Insulation and surfacing materials found in buildings constructed before 1980 is assumed to contain asbestos. PACM is treated as ACM unless proven otherwise by appropriate bulk sampling and laboratory analyses.

Regulated abatement work area - The portion of the restricted area where abatement work occurs. For tent work areas, the interior of each tent is a regulated abatement work area. For OSHA Class I and Class II asbestos abatement, the interior of the restricted area containment enclosure is the regulated abatement work area. For exterior non-friable asbestos abatement conducted without the establishment of negative air ventilation systems or containment enclosures, the entire restricted area surrounding the abatement location is considered to be the regulated abatement work area.

Regulated asbestos-containing material or **RACM** means:

- Friable asbestos-containing material.
- Category I non-friable asbestos-containing material, as defined by 40 CFR 61.141, that has become friable.
- Category I non-friable asbestos-containing material, as defined by 40 CFR 61.141, that will be or has been subjected to sanding, grinding, sawing, or abrading; or
- Category II non-friable asbestos-containing material, as defined by 40 CFR 61.141, that will likely become or has become crumbled, pulverized, or reduced to powder by the forces expected to act on the material during demolition or renovation operations.

Removal - Abatement, consisting of operations where ACM, PACM or asbestos material is removed or stripped from structures or substrates. This includes demolition operations.

Renovation - The altering of an existing building/structure, or a portion of building/structure components or systems, including the stripping, removal or abatement of ACM from a building or structure. Operations in which load supporting structural members are wrecked or taken out are demolitions.

Repair (Asbestos) - Abatement, consisting of corrective action for a Minor Asbestos Project using required work practices to control fiber release from damaged ACM, PACM or asbestos material.

Respiratory Protection - refers to a range of personal protective equipment (PPE) designed to safeguard the wearer from inhaling harmful substances. These substances can include dust, fumes, gases, vapors, and biological contaminants that are present in the air. Respiratory protective devices range from simple disposable masks to complex supplied air respirators. For asbestos work, respirators must be NIOSH-approved with appropriate NIOSH approved filters.

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Restricted Area - A restricted area established and marked for the abatement portion of an asbestos project. This area shall include but not be limited to asbestos project regulated abatement work areas and any contiguous decontamination facilities, adjoining staging areas where work materials, debris or waste from such work may accumulate, remote decontamination areas, and waste storage areas (dumpsters, trailers, etc.).

SDS - Safety Data Sheets (formerly MSDS) is a written document that outlines information, physical and chemical property information, potential hazard information, emergency procedures, and manufacturer contact information for chemicals or products.

Sealant - An encapsulating agent. A material which can be applied to asbestos-containing material which prevents the release of asbestos fibers from the material either by creating a membrane over the surface (bridging encapsulant) or by penetrating the material and binding its components together and to the substrate (penetrating encapsulant).

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

Surfactant - A chemical wetting agent added to water to reduce the surface tension of the water and improve its penetration for added mitigation of airborne fiber release.

Thermal System Insulation (TSI) - Insulating material applied to pipes, fittings, boilers, breeching, tanks, ducts or other structural components to prevent heat gain or loss.
is a thermal system insulation that contains more than 1% asbestos.

Wet Cleaning - The process of eliminating asbestos contamination from surfaces, equipment or other objects by using cloths, mops, or other cleaning tools that have been saturated with amended water.

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Appendix B. Asbestos-containing Building Materials (ACBM) Assessment Process

Process for Determining if a Material is Asbestos-Containing at Dartmouth College

When work is scheduled that will impact building materials that may contain asbestos, the supervisor should review existing information to determine what is known about that material. If the hazardous building materials report or building-specific summary is either not available or does not contain sufficient detail about building materials, please follow this procedure:

- Send an email to asbestos@dartmouth.edu or via Planon workorder, with the following information:
    - Scope of work
    - Building address/name and room number where work will take place
    - Type of building materials expected to be impacted
    - Size of area expected to impacted by the work
    - Summary of work
    - A photo showing the work location

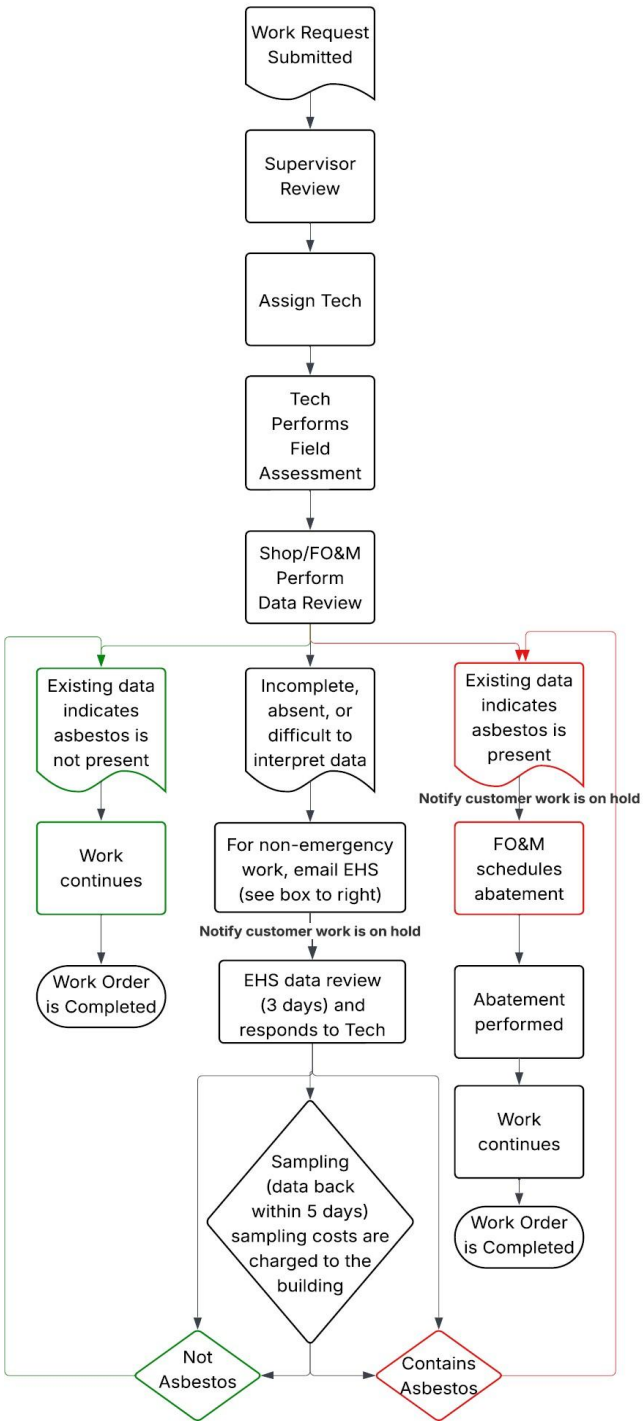
EHS will review the request and review our existing documentation within three business days of receiving the request. Reviewing this documentation involves reading through our files and potentially visiting the location to determine if representative data exists for the material being impacted. As an example: if the project involves removing ceiling tiles adhered to a plaster ceiling with a brown mastic, we will look through all of the existing reports to see if data has been collected for all those materials. If sufficient sampling data shows the materials do not contain asbestos, and if the materials match the description in the report, we can conclude that sampling is not needed, and the work can proceed.

There are situations where EHS does not have sufficient data to determine if a building material contains asbestos. In those cases, EHS will need to collect samples of the material to be impacted and send them by mail for laboratory analysis. This process can take up to five business days to receive results. EHS will provide a written report to the original requester and their supervisor describing the results.

If the material is asbestos-containing, both an abatement contractor and an abatement consultant will need to be engaged and hired to support the scope of work. EHS maintains a list of abatement contractors and consultants who have established Master Service Agreement (MSA) contracts with Dartmouth College. Please see the diagram on the next page for additional information. Note: some Dartmouth maintenance employees are trained and equipped to conduct asbestos floor tile removal.

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Asbestos-Containing Building Material Assessment Process



Email asbestos@dartmouth.edu with the following information:

1. What is the scope of work?
2. What is the building name and room number?
3. What building materials will be impacted?
4. What's the size of the disturbance?
5. Photos of area of work.
6. Any other relevant information.

NOTE: For emergencies, call EHS at 603-646-1762

If asbestos is present, the cost and schedule for the completion of work will be discussed with the customer.

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Appendix C. Emergency Response Procedures for Potential Exposure to ACM or PACM

A fiber release episode is any uncontrolled or unintentional disturbance of asbestos-containing building materials resulting in visible emission or debris. Instances of damaged walls, ceilings, and floors that are known to contain ACM could occur. Emergency release can occur from damaged building materials, moisture intrusion, construction activities, and accidental disturbance during routine work. The likelihood of an emission depends on the friability of the material as well as the physical condition which includes the state of deterioration and/or delamination, physical damage, water saturation.

While each instant of fiber release will vary, it is critical to provide support and communication.

Purpose: To address asbestos material damaged unintentionally during the course of maintenance or renovation work.

Dartmouth College employees are not trained or authorized to disturb or remove asbestos-containing materials apart from those trained specifically to remove flooring materials and to conduct material sampling. ***AT THIS TIME, NO DARTMOUTH COLLEGE EMPLOYEE CAN REMOVE FRIABLE ASBESTOS-CONTAINING MATERIAL.***

Responsibilities: The employee must report the damage to his/her supervisor and warn other employees in the area. The employee or the employee's immediate supervisor must contact EHS for assessment and action plan.

Procedures: If asbestos is damaged or becomes friable during a work procedure, work must stop immediately, any contaminated tools must be left at the site, and the area must be evacuated.

- Stop work and evacuate the area.
- Do not disturb, attempt to clean up, or work in and around damaged PACM.
- Secure the area, contact EHS, and Facilities Customer Service.
- Close and lock doors, erect temporary barriers or otherwise block access to the area and post warning signs, including but not limited to closing classroom or office space.
- Warn other people in the area of work to stay away from the debris
- Notification to Facilities Customer Service if fiber release is in an "air plenum", where fibers can be transported by the building's heating, ventilation, or air conditioning (HVAC) system.
- Do not reenter the area until a representative from EHS gives authorization.
- Work clothes will be assessed by EHS for possible contamination.
- Potential exposures are documented by supervisor's completing an incident report
- Impacted employees may request or be directed to go to Occupational Medicine at DHMC for follow-up.
- Certified workers must perform clean-up.

In some circumstances, emergency assistance from FO&M employees may be required for the shutdown of systems, including but not limited to plumbing, electrical, HVAC, and Fire Systems. During these events, FO&M workers must use the assigned PPE before entering.

EHS or asbestos consultant provides notification to NHDES in case of an accidental or emergency release of asbestos.

Personal Protective Equipment during a Fiber Release
The protective clothing to be worn is disposable and consists of coveralls, a head cover, and foot covers made of a synthetic fabric that does not allow asbestos fibers to pass through (Tyvek). This type of clothing can prevent workers' regular clothing from becoming contaminated with asbestos fibers. Contaminated clothing should never be taken home for laundering. Potentially contaminated materials, contaminated clothing and any cleaning materials shall be disposed of in accordance with Section 11 of this Program.

Some fiber releases will warrant the use of respiratory protection. Only employees enrolled in the Respiratory Protection Program, and with the proper training, can wear a respirator. A tight-fitting respirator is required for asbestos work. At no time shall the voluntary use of “dust masks” be warranted during a fiber release cleanup effort.

Emergency Closure of Buildings after Uncontrolled Fiber Release
This section outlines the procedure for clearing and closing a building in the event of an emergency asbestos fiber release. It aims to ensure the safety of building occupants, compliance with OSHA and NH DES regulations, and proper communication during both lockdown and re-occupancy phases.

Role	Responsibility
Access Control	Initiate and enforce physical lockdown of the building; restrict unauthorized access.
Customer Service	Suspend and flag related work orders; prevent new work orders from being generated for affected areas.
Facilities Management	Coordinate remediation with licensed asbestos contractors; oversee communication and regulatory reporting.
EHS	Notify regulatory agencies, conduct exposure assessments, and verify air clearance.
Communications Department	Issue occupant notifications and updates during lockdown and re-occupancy phases.

Initial Discovery and Immediate Response:
1. Person discovering potential release must immediately:
    - Cease any activity in the area.
    - Notify Facilities Management Customer Service and EHS.
2. Facilities Management must:
    - Confirm suspected asbestos fiber release
    - Activate Emergency Response Protocol

Building Closure Procedure:
1. **Access Control**
    - Dispatch personnel to restrict access to all entries of the affected building.
    - Post signage: “**DO NOT ENTER – Danger Asbestos – Authorized Personnel Only**”.
2. **Customer Service**
    - Suspend all open work orders related to the building via the Work Order Management System (e.g., Planon).
    - Flag the building in the system to **prevent new work orders** from being created until cleared.

3. **Facilities Management / EHS**
    - Maintain a log of all individuals who were in the building at the time of the closure for exposure assessment.
    - Notify supervisors of affected departments, other occupants who may have office space, or storage of materials within 24 hours of closure.
    - Engage a licensed asbestos abatement contractor.
    - Conduct air monitoring and bulk sampling as required by OSHA, EPA, and NH DES.
    - Notify NH DES of the emergency release within **one business day** (Env-A 1803.02).

Communication Protocols:

1. Occupant Notification:

The School or Department Communications Department in coordination with EHS and Dartmouth College Communications will issue an email and/or SMS alert to all building occupants with the following content:

- Description of the situation (asbestos release – building temporarily closed).
- Date/time of closure.
- Safety precautions and expectations.
- Point of contact for questions.

2. Internal Notifications:

Group	Notification Responsibility
Access Control Team	Facilities Management
Customer Service Team	Customer Service Supervisor
Regulatory Agencies	EHS/Environmental Compliance

Remediation and Re-Occupancy:

1. **Asbestos Abatement**
    - Licensed contractor performs cleanup in accordance with OSHA and NH DES protocols.
    - Air clearance sampling must confirm levels below the clearance level (0.01 fibers/cc).
2. **EHS Clearance**
    - Review and validate lab results from air monitoring.
    - Submit post-abatement documentation to NH DES.
    - Assist with QA/QC to ensure safety of occupants.
    - Perform visual inspection to confirm asbestos was abated and area is free of debris or dust, in coordination with consultant if onsite.
3. **Authorization to Re-Occupy**
    - Facilities Management issues a formal “All Clear” once QA/QC has been completed
    - Access Control removes physical barriers and signage.
    - Customer Service unflags the building in the Work Order Management System and resumes normal operations.
4. **Final Notification**
    - Communications Department(s) sends re-occupancy notice to all building occupants.
    - Include air clearance summary, date of re-opening, and safety assurance.

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Appendix D. Removal and/or Abatement of ACM Vinyl Flooring

Purpose: Establish safe, compliant procedures to remove asbestos-containing resilient floor coverings (tiles, sheets) and associated mastics/adhesives at Dartmouth College.

Scope: Applies to Dartmouth College personnel trained and authorized to perform asbestos Class II flooring work**.** Each project must be less than 160 square feet in size to fall under the annual notification requirements. The removal of ACM vinyl flooring must be completed by an employee who has received training and certification. Removing resilient floor coverings (VAT/VCT, sheet flooring, and mastics) is Class II asbestos work under OSHA 29 CFR 1926.1101. All vinyl flooring shall be considered and treated as PACM unless certified lab testing indicates otherwise.

Roles and responsibilities:

- **EHS:** Maintain Annual Notification and other relevant New Hampshire (NH) Permits, medical surveillance program, respiratory protection program, training records, air monitoring data, and written asbestos program. EHS shall coordinate with supervisors on training requirements and required work practices.
- **APM:** Act as a competent person under OSHA. Conduct exposure assessments/NEA with the assistance of the EHS industrial hygienist, select controls, oversee containment and work practices, ensure compliance, and perform routine inspections.
- **Supervisor:** Ensure staff follow this SOP; provide equipment, PPE, and training; stop work and report if damaged building materials are observed.
- **Workers:** Current NH licenses and OSHA Class II flooring training; follow this SOP; wear and maintain PPE; report issues immediately.
- Asbestos Consultant (as required): Perform air monitoring and clearance sampling.

Pre-job planning and notifications:

- **Asbestos survey:** Ensure a NH-licensed asbestos inspector in EHS has identified and documented ACM/PACM flooring and mastic.
- Notify the APM of the dates of the project, square footage to be removed, location, type of material removed, and who is conducting the work.
- Notify building occupants.
- Assessment of any and all access and egress locations that could reduce the effectiveness of emergency evacuations.
- **Work plan:** Site-specific work plan including sequence, containment layout, pressure differentials, waste logistics, emergency procedures, and air monitoring plan.
- Remove flammable/combustible materials from the work area.

PPE:

Employees are required to wear the following items during asbestos floor tile removal work: Disposable coveralls(Tyvek) with hood and booties; nitrile gloves; eye protection; safety footwear compatible with boot covers.

Materials and equipment:

- **Engineering controls**: HEPA vacuums, local exhaust shrouds.
- **Tools:** Floor tile spud bars/scrapers, hand scrapers, utility knives, infrared/warmers as applicable, pump sprayers with amended water, buckets, absorbent pads.
- **Waste:** 6-mil asbestos waste bags, labels meeting OSHA/NESHAP/DOT, duct tape.

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Removal procedures (Class II flooring)

- **General rules:** Minimize breakage. Tiles should be removed intact as much a feasible using work practices outlined in this SOP. Maintain materials adequately wet during disturbance. Use local exhaust where feasible.
- **Prohibited:** sanding/grinding of asbestos-containing flooring; dry sweeping; high-speed abrasive pads; unshrouded power scraping; use of blow torches, visible emissions.
- Use the following procedure to remove resilient tile floor covering:

  a. Floor tiles must be wetted (misted with a garden sprayer or similar) before removal begins, unless heat will be used to remove tiles.

  b. Start removal by carefully wedging a wall scraper in the seam of two adjoining tiles and gradually forcing the edge of one of the tiles up and away from the floor. Continue to force the balance of the tile up by working the scraper beneath the tile. Exert both a forward pressure and a twisting action on the blade to promote release of the tile from the adhesive and the floor. Continue in this manner until enough tiles are removed to accomplish the work.

  c. When the tile is removed place it, without breaking it further into smaller pieces, in a waste bag or waste container.

  e. Force the scraper through tightly-adhered areas by striking the scraper handle with a hammer using blows of moderate force while maintaining the scraper at a 25 to 30 degree angle to the floor. The resilient floor covering manufacturers' work practices recommend the use of safety goggles during this work.

  f. Continue to wet (mist) the tiles throughout the procedure

  g. It should be the goal to remove individual tiles as a complete unit, although breakage is unavoidable.

  h. If the procedure above is inadequate to loosen tiles use heat to soften adhesive, or alternatively, without first prying up floor tiles using a scraper, thoroughly heat the tile(s) with a hot air gun or radiant heat source until the heat penetrates through the tile and softens the adhesive, and remove tiles by hand or by using a scraper. Hot air gun or radiant heat source, tiles and adhesive should be carefully handled to avoid burns, and that heated tiles and adhesive be handled only with suitable glove protection for hands. Caution: Over-heating resilient tile might produce harmful vapors.

  i. Deposit tiles in a waste bag or leak-tight container.

  j. Wet scrape residual adhesive. After removing tile always wet scrape the residual adhesive to remove any loose material using the following procedure so that no ridges or puddles are evident and what remains is a thin, smooth film.
    - Moisten the adhesive with water mixed with liquid dishwashing detergent. Wet scrape with a stiff-bladed wall or floor scraper removing ridges and any loose adhesives.
    - Place loosened adhesive residues into a waste bag or waste container
    - Wet vacuum standing water with HEPA wet/dry vacuum.
    - Continue the above steps until remains of the residual adhesive is a thin, smooth film.

  k. Wet-wipe and/or wash down all equipment used during the work.

Tiles (VAT/VCT):

- Use of a heat gun to remove the ACM flooring from the subflooring should use a putty knife to dislodge mastics used in adherence to subflooring.
- Pre-wet tile edges or warm the tile surface (e.g., infrared/warmers) to soften adhesive. Do not use high heat that can damage materials or create fumes.
- Use putty knife/spud bars/scrapers to lift tiles intact. If tiles fracture, continue wet methods and minimize pulverization.
- Immediately place removed tiles into lined, leak-tight containers or double 6-mil bags; mist contents before sealing.

Sheets:

- Score backing carefully; apply amended water and/or compatible remover to loosen adhesive.
- Roll material carefully as it detaches, keeping the backing wet. Avoid aggressive scraping that would render it friable.
- Bag materials as they are removed.

Mastic/adhesive:

- The removal of any and all residual adhesives and/or backing shall be performed using the heating method only.
- Use a putty knife to dislodge mastics used in adherence to subflooring.
- Establish proper ventilation and use of a heat gun to remove ACM flooring materials shall not be completed in confined spaces.

Housekeeping and decontamination:

- Frequent housekeeping during work: HEPA vacuum and wet-wipe tools and surfaces; maintain drop cloth integrity.
- Final cleaning: After gross removal and initial cleaning, allow surfaces to dry; repeat HEPA vacuuming and wet-wiping; perform thorough visual inspection.
- Decontamination: Wet-wipe and HEPA vacuum PPE before doffing; dispose of disposable PPE as asbestos waste.
- Wash hands and face on breaks and after each shift.

Waste packaging, labeling, transport, and disposal:

- **Packaging:** Double-bag in 6-mil asbestos bags or place in lined, sealed, leak-tight drums/boxes. Wipe exterior clean before removal.
- **Labeling:** OSHA asbestos hazard label and generator information; apply NESHAP waste labels. Ensure DOT markings/labels for transport, as applicable.
- **Storage and transport:** Stage waste in a secured covered area (designated waste bin at Mackenzie Hall). Use a licensed hauler to transport waste. Maintain chain of custody and NESHAP Waste Shipment Records (WSR).
- **Disposal:** Deliver to an NHDES-authorized landfill permitted to accept asbestos waste. Retain manifests/WSRs per recordkeeping policy.

Restoration and re-occupancy:

- Remove signage; release area to owner.

Records and documentation:

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- Maintain Licenses, asbestos survey, NHDES annual notification, this SOP and site-specific work plan, training records, respirator program if applicable, and emergency contacts are readily available.
- **Post-job:** Close out documents including daily logs, waste shipment records, photo documentation, and any deviations with corrective actions should be compiled, filed and shared with the APM monthly.

Health, safety, and emergency considerations:

- **Heat tools:** Use only devices intended for flooring removal; monitor emissions and fire risk.
- **Medical emergencies and fiber release episodes:** Stop work, evacuate non-essential personnel, mist and cover debris, correct controls, and notify NHDES if required by rule or project conditions. See Appendix C for additional information.
- **Adjacent occupants:** Coordinate schedules, notify occupants, and verify no migration outside of work area.

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Appendix E. Cleaning of Asbestos-containing or Presumed Asbestos-containing Flooring

All vinyl and asphalt flooring should be treated as ACM unless evidence exists to prove otherwise. The following restrictions exist for the care of ACM flooring: no sanding is permitted; stripping should be conducted using low-abrasion pads at speeds lower than 300 rpm with wet methods, and burnishing or dry buffing may be performed only on flooring that has sufficient finish, so the pad doesn't contact the flooring material. Broken ACM floor tiles should only be removed by properly trained personnel.

Purpose: Provide safe methods for routine housekeeping, spills, and finish maintenance on intact asbestos-containing resilient flooring (VAT/VCT, linoleum/sheet goods installed with ACM mastic) to minimize fiber release.

Scope: Applies to custodial/maintenance staff and contractors performing cleaning in Dartmouth College owned facilities. This work practice covers the procedures for cleaning (or scrubbing) the polish on resilient asbestos flooring prior to buffing or application of additional polish. Do not polish loose or damaged resilient flooring. Any damage should be repaired before cleaning begins using the applicable work practice(s). Stop work if any damage occurs during cleaning. Contact Customer Service and your Supervisor if repairs are needed.

Roles and responsibilities:

- Facility Manager: Maintain a facility asbestos management program, keep the asbestos survey available, identify ACM areas, and train staff.
- Supervisor/manager: Ensure staff follow this SOP; provide equipment, PPE, and training; stop work and report if damaged building materials are observed.
- Custodial staff: Follow procedures; immediately report any damaged or delaminating building materials, tiles, curling sheet flooring, or exposed mastic.

Training and communication:

- Class IV Asbestos Awareness training covering locations of ACM, health risks, signage, and prohibited practices is required initially and annually for all custodial personnel.
- Post or communicate where ACM flooring is present; keep this SOP accessible.

Required equipment and materials:

- HEPA vacuum with hard-floor tools and crevice tools.
- Wet cleaning tools: microfiber mops/pads, dual-bucket system, neutral or mildly alkaline detergent.
- Low-abrasion floor care pads (white/tan/red). Do not use black, brown, or green high-abrasion pads or sanding screens.
- Low-speed floor machine or auto-scrubber capable of ≤300 rpm. Avoid high-speed or propane burnishers.
- Wet-pickup vacuum (preferably with HEPA exhaust) or squeegee and disposable wipes for slurry collection.
- PPE: Gloves, eye protection; add disposable shoe covers where needed.

Prohibited practices (OSHA):

- Do not sand asbestos-containing flooring or mastic.
- Do not use high-speed burnishers or stripping machines at ≥300 rpm on ACM floors.
- Do not use abrasive pads, sanding screens, or dry stripping methods.

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- Do not dry sweep or use compressed air on debris/dust that may contain asbestos.
- Do not buff/burnish if floor finish is too thin to prevent pad contact with the underlying ACM.

Routine cleaning procedure (intact floors)
Clean or scrub resilient asbestos flooring with adequate coats of floor polish on flooring before buffing or application of additional polish.

Preparation
- Verify the floor is intact (no broken, curling, or missing tiles; no friable edges). If not intact, stop and report.
- Tools, equipment and materials:
    - a. Tools as needed
    - b. "Caution - Wet Floor" signs
    - c. Floor scrubbing machine
    - d. Pads (least abrasive)
    - e. Buckets with mop wringer
    - f. Scraper 2-3" wide stiff blade
    - g. Mops (for scrubbing, rinsing)
    - h. Measuring device for mixing chemical cleaner
    - i. Walk-off mats
    - j. Chemical cleaner
- Restrict traffic as needed; place “Wet Floor” signs.
- Use a HEPA vacuum to remove grit and dust. Do not dry sweep with brooms.
- Damp mop the floor; do not flood unless performing controlled scrubbing.
- Prepare detergent solution per manufacturer directions. Use a clean, dedicated mop.
- Change solution frequently; do not reuse dirty water.

Spot cleaning
- Allow to soak for amount of time recommended by manufacturer. Keep floor adequately wet by reapplying cleaning solution if drying occurs.
- For sticky residues, apply small amounts of detergent, allow dwell time, then gently agitate with a non-abrasive pad by hand. Keep the area wet.
- Rinse area using clean mop and clean rinse water. Remove water with wet vacuum or mop. Damp mop area to clean up any remaining water or streaks.
- Allow to dry before reopening to traffic.

Periodic finish maintenance and stripping (intact floors)
- Goal: Maintain enough finish (often 3–5 coats) so maintenance pads never contact the ACM surface.
- Auto-scrubbing/light cleaning
- Use low-abrasion pads at the lowest practical speed; keep the surface wet throughout.
- Set auto-scrubber to high solution flow/low pad pressure; ensure no visible misting. If the machine produces airborne mist, stop and adjust or discontinue.
- Using floor scrubbing machine, manufacturer's recommended pads and operating speed, clean floor to remove embedded dirt and surface marks.
- Remove spent scrubbing solution with wet vacuum or mop.

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- Rinse area using clean mop and clean rinse water. Remove water with wet vacuum or mop. Damp mop area to clean up any remaining water or streaks.
- Allow to dry before reopening to traffic.

Finish recoating

- Clean and rinse per product instructions; apply finish to manufacturer's recommended film build.
- Finish stripping (when necessary)
    - If finish is so thin that pads could contact the tile/sheet backing or mastic, do not proceed--recoat instead or consult a licensed asbestos contractor.
    - Only if the flooring is intact and you can perform fully wet methods.
- Flood the floor section with stripping solution; allow dwell time to soften finish.
- Use a low-abrasion pad at <300 rpm. Keep the pad and floor continuously wet.
- Collect slurry with a wet-pickup vacuum (preferably HEPA-exhaust) or squeegee and disposable wipes. Do not allow slurry to dry.
- Rinse and pick up rinse water. Keep traffic off until dry and refinished.

PPE and exposure control:

- Routine intact cleaning per this SOP: gloves and eye protection. Respirators are not required when materials are intact and wet/HEPA methods are used.
- If visible dust is present or damage of PACM is discovered: stop, restrict access, and escalate to a supervisor. Do not proceed without a hazard assessment; additional protection may be required under OSHA, thus personnel with a higher level of training will repair the damaged material.

Waste handling and disposal:

- Routine mop water/rinse water: sanitary sewer disposal is acceptable.
- Solid waste (pads, wipes, used HEPA filters when contaminated):
    - Dispose of as normal waste
- Area protection and signage
    - For routine cleaning: Wet floor signs suffice.

Inspection and preventive care:

- Inspect ACM floors at least annually for damage, wear, and finish thickness; document findings.
- Maintain sufficient finish to prevent pad contact with ACM.
- Use adequate walk-off mats at entrances to reduce grit that could abrade finishes.
- Keep furniture glides in good condition to avoid gouging.

If you find pieces of damaged tile or a small piece breaks off during work:

- Restrict the area; shut off nearby fans; avoid pedestrian traffic through the debris.
- Mist the piece(s) and immediate area with water and a drop of detergent.
- Report damage to supervisor and FO&M customer service for repair or abatement. Do not attempt repairs that cut, sand, or abrade the material.

If you see widespread damage: isolate area, call FO&M Customer Service to shut off the HVAC and report damage, contact your supervisor, and call EHS.

When to stop and notify a supervisor and EHS:

- Broken, curling, or delaminating tiles/sheet goods over more than a few isolated pieces.
- Exposed or degraded mastic, or before work that would cut, sand, grind, or aggressively scrape building materials.

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- Any task you cannot keep fully wet and the use of non-abrasive tools.
- Large spill or fiber-release episodes, or any visible airborne dust from PACM materials.

Documentation:
- Keep training records, this SOP, inspection logs, and any incident/spill reports on file.

Quick reference:
- **Do:** Use wet cleaning and/or stripping methods, HEPA vacuum; damp mop; use low-abrasion pads at <300 rpm; keep surfaces wet; maintain finish build; isolate and report damaged materials.
- **Don't:** dry sweep in areas of damaged materials or dust; sand; cutting, dry buffing, high-speed burnish; use abrasive/screen pads; allow slurry to dry; ignore damaged flooring.
- Never use compressed air to blow off potentially contaminated surfaces
- Follow the Dartmouth College Custodial floor cleaning standard operating procedure (SOP CS 015.0 Restorative Floor Care and other applicable SOPs)
- Take care to avoid bumping or disturbing pipe insulation
- Report any damaged flooring or other building materials to your supervisor and FO&M customer service

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Appendix F. Monitoring of Roofing Abatement Projects

Requirements for the Removal of Asbestos-Containing Roofing Materials

Introduction
Asbestos abatement in New Hampshire is regulated by the New Hampshire Code of Administrative Rules Chapter ENV-A 1800: Asbestos Management and Control, Chapter ENV-Sw-900: Management of Certain Wastes, Title X Public Health Chapter 141-E: Asbestos Management and Control, the Environmental Protection Agency (EPA), and the Occupational Safety and Health Administration (OSHA). Other relevant guidance includes EPA 340-8-94-001: Applicability of the Asbestos National Emission Standard for Hazardous Air Pollutants (NESHAP) To Asbestos Roofing Removal Operations.

Regulatory Requirements
- Follow all State and federal asbestos abatement, licensing, and disposal requirements.

Who Can Perform Work
- Roofing contractors who have met the training requirements of OSHA 1926.1101(k)(9)(iv)(A) are permitted to remove **non friable** asbestos-containing asphalt roofing materials provided they do not sand, saw, cut, drill, or otherwise treat the Asbestos-containing Materials (ACM) in a manner that might create a fine dust or particles (ENV-A 1806.02).
- A licensed abatement contractor must be engaged in the removal of asbestos-containing asphaltic roofing materials if methods such as sanding, sawing, cutting, drilling, or otherwise potentially creating fine dust, are required to be used.
- A licensed abatement contractor must be engaged in the removal of asbestos-containing cementitious roofing materials or other **friable** roofing materials.

Preparation for Roof Work
- An Asbestos Notification form must be filed by the contractor at least 10 working days prior to the start of work for projects greater than 160 sf. A copy of the notification must be submitted the NHDES and the APM. If the project is less than 160 sf of material notify the APM of the amount to be removed before the start of the project.
- Identify all air intakes within 50 feet of the work zone, and either block off, install filtration media, or re-direct away from the work zone.
- Keep all windows within 25 feet of the work zone closed during removal, measured horizontally and vertically.
- Identify nearby sources of water for dust migration.
- Install a perimeter to prevent removed materials from dropping to the ground and protect the ground near the work surface with a poly drop cloth.
- Determine a method for removal of asbestos-containing materials from the roof. Materials may not be dropped or transported to ground surface via a chute.
- Locate a secure asbestos storage container provided by contract near the work site.
- Post telephone numbers of the nearest emergency facilities in a location that is visible from the work area;
- Post warning signs, as specified in 29 CFR 1910.1001(j)(4), at all entrances to the roof;
- Seal nearby roof drains daily; unplug these drains each night.

Intent of Work

- The intent and scope of the work should be to remove all asbestos-containing materials from the roof. Additional requirements may be necessary should asbestos-containing materials be left in place, covered, or encapsulated. Materials left in place must be documented by the contractor in the closeout materials sent to the project manager and APM.

Roofing Material Removal

- A HEPA-filtered tool shall be used to prevent generation of visible emissions;
- Water shall be applied at the point of abrasion with a hose or an airless sprayer and in sufficient volume so that no visible emissions result from the operation other than water spray;
- Cementitious ACM shall be removed intact, to the extent possible, by prying out or cutting fasteners;
- Asbestos-containing roofing materials must be properly packaged for disposal on the roof and may not be left on the roof overnight.
- Cementitious ACM shall be carefully lowered to the ground, not dropped, thrown, or slid;

Project Monitoring

- Dartmouth College Project Management will designate a Project Monitor/Asbestos Consultant who will be onsite to periodically monitor the asbestos abatement portion of the roofing project. The project monitor will review work practices against the applicable regulations and can halt work should they identify work practices that are not consistent with this document, with State or federal regulations, or that present an immediate or future health hazard to workers, building occupants, or others.
- The Project Monitor/Asbestos Consultant will conduct perimeter air sampling during the removal of asbestos-containing materials and when the composition of the asbestos-containing material changes (i.e.: switching from removal of asbestos-containing shingles to asbestos-containing tar paper).

Personal Exposure Monitoring

- The consultant shall conduct daily personal air samples on a representative number of employees who are actively engaged in the removal of asbestos-containing roofing materials.
- Results shall be provided to the APM when requested and at the end of the project as part or the close out documents.

Worker Protection

- Contractors will comply with OSHA 29 CFR 1926.1101 and appropriate ANSI standards. PPE may include, but is not limited to, respiratory protection, full body disposable protective clothing, gloves, hard hats, eye protection, safety harnesses, and safety shoes.
- Contractors engaged in removal of asbestos-containing roofing materials must comply with OSHA 29 CFR 1910.134 (Respiratory Protection Standard) and OSHA 29 CFR 1926.1101 (Construction Standard for Asbestos-containing Materials).
- Use of a safety harness is strongly recommended for working on sloped roofs.

Disposal

- A Dartmouth College-approved asbestos abatement contractor must be involved in the storage and disposal of asbestos-containing materials.

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- All roofing material waste shall be removed, packaged, labeled, and disposed of as specified in NH Env-A 1812.01(b), Env-A 1812.01(c), Env-A 1812.01(g), Env-A 1812.02 and Env-A 1812.03.
- NHDES, PM and APM must be provided with copies of approvals, forms, and manifests in a timely manner.

Additional Requirements

- Wet methods must be used during the removal of asbestos-containing roofing materials.
- No visible dust emissions are permitted when working with asbestos-containing materials. Should dust be visible, the contractor will use more aggressive wet methods and/or HEPA shrouded tools to minimize dust migration.
- All communication with the NHDES must be coordinated with Dartmouth College EHS.
- The contractor must maintain compliance with the OSHA Fall Protection standard (OSHA 29 CFR 1926.501) and any additional Dartmouth College specific fall protection requirements.

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Appendix G. Asbestos Abatement Closeout Report Template

For use by asbestos abatement contractors, consultants and Dartmouth College personnel authorized to remove asbestos flooring materials.

Project Information

Project Name:
Project Address:
Building/Floor/Room #:
Owner/Client:
Abatement Contractor:
Supervisor:
Start Date and Completion Date:
Description of Work Area:

Scope of Work

Describe the materials abated, quantities, and methods used:

Floor Plans and Left-In-Place Conditions

Attach floor plans and identify all areas of abatement (removed or encapsulated) and materials left in place. [Insert floor plan images or attach files here]

Photo Documentation

Attach photos below or in appendix. Include the following:

1. Pre-Abatement Conditions
2. Containment Setup
3. In-Progress Abatement
4. Post-Abatement Clean Area

[Insert photos here — before, during, and after abatement]

Waste Manifests and Disposal Records

Attach all waste shipment records, manifests, and landfill receipts below:
[Insert waste manifest photos or scanned copies here]

Air Clearance and Sampling Results

Attach laboratory results and clearance certificates:
[Insert clearance data or attachments here]

Final Certification

I hereby certify that all asbestos abatement activities described herein were completed in accordance with applicable federal, State, and local regulations.

Abatement Contractor Representative (Print & Sign): _____ Date: _____

Consultant/Air Monitor (Print & Sign): _____ Date: _____

EHS Approved By:		**Approval date:**	
Revision #		**Revision date:**	

Appendix H. Asbestos Sampling Procedure

SOP for Dartmouth Licensed Asbestos Inspectors

Always assess risk before disturbing suspected materials. Do not sample materials in confined spaces or other known hazardous conditions. Stop work and reassess if visible dust/debris is generated or if material(s) are more friable than expected.
In addition, the inspector will review building plans, historical hazardous material sampling and project scope, to better understand where hazardous building materials may be located and to develop a sampling plan.

Sample locations should be selected so that they are representative of the sampling area.

1. Purpose:

This Standard Operating Procedure (SOP) outlines the proper and compliant method for the identification and sampling of suspect asbestos-containing materials (ACMs) by a licensed asbestos inspector in the State of New Hampshire (NH). This SOP ensures the health and safety of all parties involved and compliance with NH Department of Environmental Services (NHDES), U.S. Environmental Protection Agency (EPA), and Occupational Safety and Health Administration (OSHA) regulations.

2. Scope:

This procedure applies to all site inspections conducted by Dartmouth licensed asbestos inspectors for the purpose of collecting limited scope samples of suspect ACMs from all Dartmouth-owned properties, including but not limited to commercial, residential, industrial, or public buildings in New Hampshire.

References:

- NH Code of Administrative Rules Env-A 1800 (Asbestos Management and Control)
- OSHA 29 CFR 1926.1101 – Asbestos Construction Standard
- NIOSH Method 9002 / EPA Method 600/R-93/116 – Bulk Asbestos Sampling
- ASTM E2356 – Standard Practice for Comprehensive Building Asbestos Surveys

3. Sampling Procedure:

Prepare the Area:

- Coordinate with building occupants to restrict access during sampling.
- Review the sample location for homogeneous building materials. Review locations where surfacing materials may have been altered (e.g., patch locations).
- Establish a clean sampling area through the use of drop cloths or painter's tape.

4. Personal Protective Equipment (PPE):
    - Don appropriate PPE before sample collection (gloves, safety glasses, respirator, etc.)

5. Sample Collection:
    - Sample locations for surfacing materials can be collected from behind outlet covers by competent persons.
        - Do not use the wet method for sampling behind outlet covers.
        - Outlet covers provide a visual advantage for wall layers and applications. Often, they are reciprocals of excess joint compound and drywall.
    - Sampling from the cove base and then re-adhering to the wall will prevent the need to patch the sample location to prevent fiber releases.

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- Locations above ceiling tiles may be an option for sampling surface materials.
    - Always review data for ceiling tile composition.
    - Do not work off a ladder unless you have been properly trained to do so.
- Lightly wet the area with soapy water to minimize potential fiber release.
- If the asbestos inspector is not using the wet method, they must implement proper PPE until negative exposure monitoring is completed.
- Use clean tools to extract a representative sample.
- Samples will be collected by simple hand pressure only.
- For homogeneous materials, collect at least 3 samples per material type, per EPA guidelines, limited scope sample is required for impacted building materials in one location.
- For thermal system insulation, take at least 3 samples per system or location.

6. Sample Handling:
    - Place the sample into a sealable bag immediately and seal. If dust/debris is on the outside of the sample bag, place the sample in an additional bag. This is for the protection against cross-contamination and for the overall safety of lab tech.
    - Label the sample clearly with your unique designation and sample number. Include the material sampled and the location. It is helpful to take a picture of the sample bag with the location for record keeping and reports.
    - Decontaminate tools between each sample using wipes or washing of sampling tools to avoid cross-contamination.
    - Complete the chain of custody and submit to the EHS administration assistant for mailing.

7. Tape Lift Samples:

It is possible to collect “dust” samples for asbestos when needed to collect additional information about a space; however, there is no federal or state regulation or guideline that defines acceptable levels of asbestos in dust.

- Using simple “scotch” tape, collect dust on the adhesive side.
- Adhere to the inside of the bag.
- Label the sample clearly with your unique designation and sample number. Include the material sampled and the location.

8. Send bulk samples to only NIST or AIHA accredited laboratories using the appropriate method (PLM and/or TEM) and reporting methods. The laboratory should also have an approved service agreement with Dartmouth College.

9. Once sampling results are received complete an EHS Inspection report in a timely manner, share with the requester, other associated parties, and the EHS administration assistant to file in the building files on the EHS Share drive.

10. EHS will update the existing Hazardous Building Material summary with updated information and dates.

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Appendix I. Notification to NHDES for ACM Removal

- Determine the scope of asbestos abatement
- Determine who will conduct the work (Dartmouth Personnel or Contract)
- Determine amount of material and type to be removed
    - If a minor project (<10 sf), then no notification is required.
    - If a major project less than 260 lf, 160 sf or 35 cf, request use of the annual notification and provide details of project to the APM before the start of work.
    - If greater than 260 lf, 160 sf or 35 cf, a notification is required to be submitted to the State at least 10 days prior to the start of work. Provide a copy of this notification to the APM or project manager (PM).
- Coordinate with the PM and APM on start of work and any additional coordination associated with the project such as notifying occupants and organizations.
- Coordinate with asbestos consultant on project requirements and plan for sampling and air monitoring.
- Complete work in accordance with State and federal law.
- Once abatement is complete and cleaned up, transport waste to an approved facility.
- Abatement supervisor, contractor or consultant files all close out documents with NHDES, PM and APM.
- APM compiles information for all projects that fall under the annual notification and reports this information quarterly to NHDES.
- APM files in EHS building folders and sends to Planon for entry into building information.

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