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# Asbestos Operations and Maintenance Procedures

The University of North Carolina at Greensboro



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## **INTRODUCTION**

The University of NC at Greensboro "Operations and Maintenance Program for Control of Exposure to Asbestos" was developed as an operational document to assist in controlling exposure to asbestos.

In response to OSHA regulations, this document also contains procedures and requirements for training employees who work in buildings which contain asbestos containing building materials. Prohibited activities for persons not trained specifically with asbestos are also included.

Step-by-step procedures for safe maintenance activities have been developed which are found in the attached program. This Operation's and Maintenance Program addresses all necessary aspects including discussion of applicable regulations, requirements, permits, medical surveillance, personal protective equipment, work practices, monitoring, and employee training.

In order to protect persons occupying university facilities, this policy also addresses the contracting work involving the disturbance and/or removal of asbestos containing building material.

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### **I. PURPOSE**

The purpose of the UNCG Operations and Maintenance Program is to manage activities related to building occupancy, maintenance, and repair in order to protect workers, employees, subcontractors, and building occupants from the hazards associated with friable Asbestos Containing Materials (ACM), Potential Asbestos Containing Material (PACM) and non-friable ACM which could become friable. In addition, this plan will address contractor, occupant, and employee notifications and information about asbestos containing building materials in university occupied facilities.

UNCG shall implement the following operations and maintenance program in buildings where friable and non-friable ACM are known or presumed to be present. Departments that have employees who perform maintenance and construction type activities must follow these guidelines to insure the safe handling of asbestos containing building materials at the university. Departments that contract work to be performed on or in university facilities must follow the procedures outlined in these procedures, to insure the safe and professional management of projects that will disturb or remove asbestos containing materials. Department Heads will have the ultimate responsibility for insuring that their employees are trained and follow the procedures outlined in this program.

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### **II. LEVELS AND LIMITS OF OPERATIONS**

#### **A. Public Areas**

Individually permitted asbestos removal activities conducted in public areas are required to be designed and conducted by persons accredited by the Department of Health and Human Services (DHHS). When Class III Activity Work is performed on Thermal System Insulation (TSI), Surfacing Material or other friable material in a public area, the area shall be monitored by an accredited air monitor in accordance with 15A NCAC 19C.0605. This includes nonfriable material

that will be sanded, abraded, cut or otherwise made friable. Public Area is defined in General Statute 130A-444(7), and is any area *other than* areas to which access by the general public is usually prohibited, or is usually limited to access by escort only. If Class III activity work is performed on nonfriable material and monitoring of the employee performing the work reveals that Permissible Exposure Limit (PEL) has been exceeded, the area shall be cleared by an accredited air monitor to insure the work area is not contaminated.

## **B. Limitations**

Only employees specifically trained as Class III Activity Workers will perform operations which are likely to disturb ACM or PACM. No Class III removal activities will be conducted by UNCG Employees. No other university employee shall perform work that will disturb ACM or PACM.

Before **any** work begins that will disturb **any** building materials, the employee must know whether the building material contains asbestos. This is accomplished by the following procedure:

1. Prior to the commencement of work which will disturb building materials, the employee or supervisor will check with the Campus-Wide Asbestos Survey to verify the presence or absence of ACM or PACM in the worksite. If the work involves the likely disturbance of ACM or PACM, then the work must be performed by trained Class III Activity Workers or qualified contractor.

2. If the employee or supervisor is unable to determine whether or not asbestos is present, then they can contact the O & M Coordinator. If the O & M Coordinator is unsure about the presence of asbestos, then the material shall be tested or presumed to contain asbestos. If a material to be disturbed contains asbestos, or if it is presumed, then the work shall be performed by trained Class III Activity Workers or qualified contractor.

Only employees specifically trained as Asbestos Project Managers will supervise the contracting of work to disturb or remove asbestos containing building materials.

## **C. Work Classifications**

The following classification of work with asbestos containing building materials is to be used in accordance with this policy.

**Class I** -- Activities involving the removal of TSI and asbestos containing surfacing materials, where the primary reason for the project is to remove the material from the facility. This includes removal of ACM in quantities greater than 260 linear feet, 160 square feet, or 35 cubic feet, requiring a permit from the DHHS. **No UNCG employees will conduct Class I activities.**

**Class II**-- Activities involving the removal of asbestos containing materials (ACM) which is not TSI or surfacing material. This includes, but is not limited to, the removal of asbestos containing wallboard, floor tile and sheeting, roofing and siding materials, and construction mastics. The primary purpose of this class of project is to remove the material from the facility. This includes removal of ACM in quantities greater than 260 linear feet, 160 square feet, or 35 cubic feet, requiring a permit from the DEHNR. **No UNCG employees will conduct Class II activities.**

**Class III** -- Activities involving repair and maintenance where asbestos containing material, including TSI and surfacing material, is likely to be disturbed. Class III work will only be performed

by employees who are accredited to at least the worker level in accordance with DHHS requirements (twenty-four hour training).

**Class IV** -- Maintenance and custodial activities during which employees contact asbestos containing material and activities to clean up waste and debris containing suspect or asbestos containing materials.

Examples include, but are limited to:

- Sweeping, mopping, cleaning, and vacuuming of asbestos containing material
- Stripping and buffing of asbestos containing resilient flooring
- Cleanup of waste or debris after a Class I, II, or III operation

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### **III. RESPONSIBILITIES**

#### **A. Asbestos Policy Coordinators**

Designated individuals shall serve as coordinators and be responsible for ensuring that their respective portions of this plan are implemented. Five positions shall be designated as follows:

- DHHS Coordinator (Facilities Design & Construction)
- O&M Coordinator (Facilities Operations)
- Asbestos Information Coordinator (Environmental Health and Safety)
- Asbestos Project Managers (Facilities Design and Construction and Facilities Operations)

Responsibilities shall be designed or shared as follows:

#### **DHHS Coordinator (Facilities Design and Construction)**

1. Compliance with all applicable OSHA, EPA and NC Asbestos Hazard Management Branch Rules and Regulations.
2. Ensure that all Class I and II activities are designed, conducted and completed by persons accredited by North Carolina Asbestos Hazard Management Branch.
3. Ensure that all North Carolina Asbestos Hazard Management Branch, OSHA and EPA notifications, permits, and fees are filed.

#### **O&M Coordinator (Facilities Operations)**

1. As requested by employees about to perform work on building materials, provide information about which materials in a particular worksite contain asbestos.
2. Compliance with all applicable OSHA, EPA and NC Asbestos Hazard Management Branch Rules of DHHS and Regulations.
3. Ensure that all persons required to disturb ACM or PACM, Class III Activity Workers, are:

a) Accredited to at least the worker level in accordance with DHHS requirements (twenty-four hour training). Training shall be in accordance with [Section VI](#) of this O&M Plan

b) Enrolled in the Department of Environmental Health and Safety medical surveillance program for compliance with [29 CFR 1926.1101](#). The medical surveillance program shall be implemented in accordance with [Appendix A](#) of the plan.

c) Enrolled in the Department of Environmental Health and Safety respiratory protection program for compliance with [29 CFR 1910.134](#). The respiratory protection program shall be implemented in accordance with the [UNCG Respiratory Protection Program](#) and Appendix B of this O&M Plan.

d) Enrolled in the North Carolina Dusty Trades Program and ensure that each employee has a Dusty Trades Card.

4. Ensure that all activities which could result in the disturbance of ACM or PACM be conducted in accordance with this O&M Plan. The coordinator shall make the final decision to determine if an activity falls within the scope of these procedures.

5. Ensure that no activities except Class III and Class IV activities, as defined by this policy, are carried out by Facilities Operations employees. Ensure that Class III contractor led work is carried out under the direction of an Asbestos Project Manager.

6. In addition, the O&M Coordinator shall be or supervise, an accredited supervisor, who is accredited through the Asbestos Management Branch of DHHS.

The accredited supervisor shall:

a) Be the "Competent Person" as defined by OSHA, meaning that this person is authorized to take steps necessary to immediately correct hazardous or dangerous situations.

b) Ensure that all applicable EPA, OSHA, and North Carolina Asbestos Hazard Management Branch Regulations are met and adhered to.

c) Ensure that all necessary precautions and warnings to protect building occupants have been implemented.

d) Ensure that all workers associated with the O&M activity are currently enrolled in UNCG's Medical Surveillance, and Respiratory Protection Programs. Workers and building occupants shall be protected at all times.

e) Ensure that appropriate work practices are implemented to protect worker, building occupants, and to limit the spread of airborne asbestos fibers.

f) Ensure that procedures for evaluating the completion of the O&M activity are implemented.

g) Ensure that all ACM and debris associated with the activity is properly disposed of in accordance with [Section XII](#) of this plan.

h) Ensure that all records for each O&M activity are sent to the DHHS coordinator at the completion of the activity.

- i) Ensure that Asbestos Inventory Control Report and Transmittal Forms ([Appendix D](#)) are forwarded to the Department of Environmental Health and Safety within fourteen days of completion of any asbestos testing, abatement, or encapsulation.

### **Asbestos Information Coordinator (Environmental Health and Safety)**

1. Informing building occupants of the presence and locations of all ACM or PACM in the facility. This information shall include the location of the ACM or PACM, prohibited activities, steps necessary to prevent disturbance, and procedures regarding emergencies.
2. Establishing and maintaining a medical surveillance program for compliance with [29 CFR 1926.1101](#). The medical surveillance program shall be implemented in accordance with Appendix A of this plan.
3. Establishing and maintaining a respiratory protection program for compliance with [29 CFR 1910.134](#). The respiratory program shall be implemented in accordance with the UNCG Respiratory Protection and Appendix B of this O&M Plan.
4. Route Asbestos Inventory Control Report and Transmittal Forms to Inventory Manager to ensure update of survey. Receive forms back and archive.
5. Maintain Campus-Wide Asbestos Survey in both paper and electronic forms, by updating using data provided by Asbestos Inventory Control Forms. Regularly distribute updates for all copies of the Survey.

### **Asbestos Project Managers (Facilities Design and Construction and Physical Plant)**

1. Ensure that construction and renovation projects are completed in accordance with all applicable OSHA, EPA, and NC Asbestos Hazard Management Branch rules and regulations.
2. Ensure that steps and procedures outlined in these procedures are performed.
3. Coordinate Activities with DHHS Coordinator to obtain permits and provide required information. Ensure legal and proper disposal facilities are available to any asbestos removed, prior to project start.
4. Ensure that Asbestos Inventory Control Report and Transmittal Forms are completed and forwarded to the Department of Environmental Health and Safety within fourteen days of completion of any asbestos testing, abatement, or encapsulation.
5. Maintain accreditation as an Asbestos Abatement Designer in accordance with DHHS Regulations.

### **B. Recordkeeping**

Each Coordinator shall ensure that all applicable records are maintained as follows:

- Medical Surveillance, in Environmental Health and Safety
- Dusty Trades Program, in Facilities Operations



- Respiratory Protection, in Environmental Health and Safety
- Training, in Environmental Health and Safety (forwarded from department)
- Asbestos Inventory Control Forms, Environmental Health and Safety
- Class I and II Abatement Activities, in Facilities Design and Construction, with copies forwarded to the Department of Environmental Health and Safety.

### **C. Departments Performing Maintenance and Construction Type Activities**

Department Heads whose departments are engaged in activities that require their personnel to conduct work that could disturb ACM or PACM must insure that their employees are trained in accordance with this program. These departments may include, but are not limited to Facilities Operations, Residence Life, Telephone Services, and Information Services. Departments other than Facilities Operations may not allow their personnel to disturb asbestos containing building materials, as required in this program.

### **D. Contractors**

Contractors performing work on or in university facilities must be informed about ACM or PACM *that might be encountered* during the performance of their work. This notification shall include the presence, location, and quantity of material. In addition, the contractor should be informed that they must report any ACM or PACM discovered during their work to the university within twenty-four hours of discovery. The specific duties of contractors are detailed in [29 CFR 1926.1101 \(k\)](#). Department Heads of departments contracting must insure that the procedures outlined in these procedures are followed.

Contractors performing work *that will disturb or remove ACM or PACM licensed abatement contractors as specified by applicable regulations* and must be managed by designated Asbestos Project Managers.

### **E. Class III Activity Workers**

Employees who conduct Class III activities shall be responsible for understanding the procedures outlined in this O&M Plan. They shall be responsible for conducting activities in a manner which is safe and limits their own exposure to asbestos fibers, limits the exposure to their co-workers and building occupants, and limits the potential for spreading asbestos fibers to areas outside the work zone. They will be accredited to at least the worker level in accordance with DHHS requirements (twenty-four hour training).

## **IV. APPLICABLE REGULATIONS, REQUIREMENTS AND PERMITS**

### **A. OSHA**

Operations and Maintenance activities are regulated by OSHA through Federal Regulation [29 CFR 1926.1101](#). All persons involved in O&M activities shall have a working knowledge of this regulation. The on-site supervisor and O&M Coordinator shall have the responsibility of ensuring that all portions of the regulations are followed.

### **B. North Carolina Asbestos Hazard Management Program**

Asbestos Containing Building Material (ACBM) in North Carolina is regulated by the North Carolina Asbestos Hazard Management Branch (AHMB) of DHHS through Section 1, Chapter 130A, Article 19 of the General Statutes. The on-site supervisor and O&M Coordinator shall have the responsibility of ensuring all portions of the North Carolina & EPA regulations are followed.

The DHHS Coordinator and Asbestos Project Managers shall ensure that:

1. A permit is obtained from DHHS where O&M activities may exceed 160 square feet, 260 linear feet, or 35 cubic feet of ACBM (during a calendar year). The coordinator shall ensure that fees for O&M activities are paid.
2. Proper notification is given to the DHHS pursuant to the NESHAP regulations.
3. All asbestos removal activities in public areas, including O&M activities, are designed, conducted and certified by persons accredited by DHHS to conduct such activities.
4. All public areas do not exceed the "Asbestos Exposure Standard for Public Areas" of 0.01 fibers per cubic centimeter of air, during removal projects.

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## **V. TRAINING AND ACCREDITATION**

### **A. On-site Supervisor Training**

The on-site supervisor (O&M Coordinator) shall be trained in the aspects of Asbestos Abatement ([29 CFR 1926.1101](#) & 40 CFR 61 Subpart M). A training course approved by the DHHS for a supervisor level employee is required (forty hour accredited training course). Supervisor level accreditation will be maintained, as necessary.

### **B. Class III Activity Workers**

All workers conducting Class III activities shall receive training annually ([29 CFR 1926.1101](#)). This training will be at a minimum, equivalent to a DHHS worker level training a (twenty-four hour accredited training course) and accreditation at this level maintained. Training shall include methods of recognizing asbestos, health effects of asbestos, the relationship between smoking, asbestos and lung cancer, procedures and controls to be utilized to limit exposure to asbestos, respiratory protection, appropriate work practices, medical surveillance program requirements, and review of applicable standards.

### **C. Maintenance and Custodial Employees**

All university employees whose work requires them to come in contact or disturb asbestos containing building materials must receive a two hour asbestos awareness training program *prior to initial assignment* and *annually* thereafter. This training must include information regarding the various uses and forms of asbestos, potential health effects of exposure, potential locations of asbestos throughout the workplace and how to determine exact locations, how to recognize damaged asbestos containing building materials, and steps to take to report and contain such material. In addition, the training should include a review of these procedures.

Documentation of this training shall be made on the appropriate form in Appendix C, and a copy shall be supplied to the Department of Environmental Health and Safety.

## **D. Other University Employees**

All other university employees will receive training to inform them about the presence of ACM or PACM within their building. This training will include the possible location of the ACM or PACM, prohibited activities, steps necessary to prevent disturbance, and procedures regarding fiber release episodes. This shall be completed during new employee orientation and prior to initial assignment.

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## **VI. PROHIBITED ACTIVITIES**

It is very important that all personnel, especially those involved in maintenance, repair, and custodial activities understand that certain activities normally performed are *prohibited where ACM or PACM is present*. With the exception of Class III Activity Workers, the following is a list of prohibited activities for university employees.

- Not to drill holes in presumed asbestos containing materials (PACM) or asbestos containing materials (ACM)
  - Not to hang plants or pictures on structures covered with PACM or ACM
  - Not to sand asbestos containing floor tile
  - Not to damage asbestos containing floor tile
  - Not to install curtains, drapes or dividers in such a way that they damage PACM or ACM
  - Not to dust floors, ceilings, moldings, or other surfaces in asbestos contaminated environment with a dry brush or sweep with a dry broom
  - Not to remove lock or other hardware in asbestos containing doors
  - Not to use an ordinary vacuum to clean up asbestos containing debris
  - Not to remove ceiling tiles below asbestos containing materials without wearing the proper respiratory protection, clearing the area of the people, and observing asbestos removal and waste disposal procedures
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## **VII. FIBER RELEASE EPISODES**

### **A. Major Fiber Release Episodes**

The following procedures are to be followed in the event of a major fiber release episode (i.e., the falling or dislodging of more than three (3) square or linear feet of friable ACM or PACM including a release of an unknown quantity):

- Restrict entry into the area and post signs to prevent entry into the area by persons other than those necessary to perform the response action.

- Shut off or temporarily modify the air-handling system to prevent the distribution of fibers to other areas in the building.
- The response action for any major fiber release episode must be designed by persons accredited to conduct response actions. Contact the DHHS Coordinator.

Persons responding to release episodes must either be trained and accredited as Asbestos Supervisors or Workers as detailed in [Section VI](#) of this Policy.

## **B. Minor Fiber Release Episode**

The following procedures are to be followed in the event of a minor fiber release episode (i.e., the falling or dislodging of three (3) square or linear feet or less of friable ACBM):

- Only employees trained to perform Class III work or accredited contract employees, shall be used for such work.
- Thoroughly saturate the debris using wet methods.
- Clean the area, as described in this program.
- Place the asbestos debris in a sealed, leak-tight container and properly dispose of in accordance with [Section XII](#) of this plan.
- Repair the area of damaged ACM with materials such as asbestos-free spackling, plaster, cement, or insulation; seal with latex paint or an encapsulate.

Persons responding to release episodes must either be trained and accredited as Asbestos Supervisors or Workers as detailed in [Section VI](#) of this Policy.

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## **VIII. PROTECTIVE EQUIPMENT and MONITORING for PHYSICAL PLANT CLASS III ACTIVITY WORKERS**

### **A. Protective Clothing**

UNCG will provide personnel exposed to airborne concentrations of asbestos fibers with fire retardant, disposable, whole body coveralls, head covers, rubber or plastic gloves, and foot coverings secured at the ankles by the use of duct tape. Such items must be properly disposed of in accordance with [Section XII](#) of this plan.

### **B. Eye Protection**

UNCG shall provide goggles to personnel engaged in asbestos operations when the use of a full face respirator is not required. Eye protection shall be washed thoroughly by the user upon exit from a regulated area.

### **C. Respirators**

UNCG shall provide respirators, at no cost to the employee. The respirators shall be appropriate, in accordance with Table 1 in paragraph (h)(2) (iii) of [29 CFR 1926.1101](#). Additionally, a tight fitting, powered, air purifying respirator shall be supplied if an employee chooses this type and it will provide adequate protection. Any employee wearing a respirator must be enrolled in the

[UNCG Respiratory Protection Program](#). HEPA filters on all equipment shall conform to ANSI Z9.2.

## D. Monitoring

Workers performing Class III activity work shall be monitored in accordance with [29 CFR 1926.1101](#), Appendix A. This personal monitoring shall be performed by the O&M Coordinator or the Accredited Supervisor. When Class III Activity Work is performed on TSI, Surfacing Material or other friable material in a public area, the area shall be monitored and cleared by an accredited air monitor in accordance with 15A NCAC 19C.0605. This includes nonfriable material that will be sanded, abraded, cut or otherwise made friable. Public Area is defined as in G.S. 130A-444(7). Any area to which access by the general public is usually prohibited, or is usually limited to access by escort only, shall **not** constitute a Public Area. If Class III activity work is performed on nonfriable material and monitoring of the employee performing the work reveals that permissible exposure limit (PEL) has been exceeded, the area shall be cleared by an accredited air monitor to insure the work area is not contaminated.

## E. Employee Exposure Measurements

The O&M Coordinator shall insure that employee exposure measurements are recorded when work is performed that may disturb PACM or ACM. These records shall be in accordance with [1926.1101](#)(n) and be kept on the appropriate form provided in [Appendix B](#). A copy of each record will be forwarded to the Department of Environmental Health and Safety where it will be maintained for at least thirty years.

## F. Negative Exposure Assessment

In lieu of personal monitoring for Class III Activity Workers for any specific job, a negative exposure assessment may be made. To determine a negative exposure assessment for any **one specific job** which will be performed by trained Class III Activity Workers, the O&M Coordinator may prove that employee exposure will be below the Permissible Exposure Limit (PEL). This may be done by showing that personal monitoring conducted for Class III activity **within 12 months**, for a job "closely resembling" the work to be conducted was below 0.1 fiber per cubic centimeter, monitored in accordance with 29 CFR 1926.1101, Appendix A. To determine if a job closely resembles another, include the processes, type of material, control methods, work practices, and environmental conditions.

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# IX. BUILDING OCCUPANT NOTIFICATION

## A. Warning Signs for Mechanical Areas

At the entrance to mechanical rooms or areas which contain asbestos containing thermal insulation or surfacing material, a sign shall be posted to warn entrants. The sign will identify the material present and appropriate work practices that will insure that the ACM or PACM is not disturbed. An example would be:

**DANGER**

**ASBESTOS CONTAINING SURFACING MATERIAL ON CEILING**

**DO NOT DRILL, CUT, OR MAKE ANY**

**CONTACT WITH THE CEILING**

**B. Warning Signs for Regulated Areas**

Warning signs are not intended as general information. Warning signs serve as a final line of defense to prevent unprotected individuals from unknowingly entering a regulated area. Where O&M activities involving ACM or PACM are taking place requiring a regulated area, warning signs shall be placed at each entrance in accordance with [29 CFR 1926.1101](#) (OSHA Asbestos Standard for the Construction Industry; Signs). The specific wording of the sign shall be as follows:

**DANGER**

**ASBESTOS**

**CANCER AND LUNG DISEASE HAZARD**

**AUTHORIZED PERSONNEL ONLY**

**RESPIRATORS AND PROTECTIVE CLOTHING ARE REQUIRED**

**IN THIS AREA**

**C. Warning Labels for Asbestos Waste**

Warning labels shall be affixed to all asbestos waste in accordance with [29 CFR 1926.1101](#) (OSHA Asbestos Standard for the Construction Industry; Labels). The labels shall be printed in large bold letters on a contrasting background and have the following wording:

**DANGER**

**CONTAINS ASBESTOS FIBERS**

**AVOID CREATING DUST**

**CANCER AND LUNG DISEASE HAZARD**

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**X. PRE AND POST OPERATIONS & MAINTENANCE ACTIVITIES**

The on-site supervisor or Asbestos Project Manager shall ensure that the procedures described below (to protect building occupants) are followed for any O&M activity associated with ACM or PACM.

- Restrict or verify restricted entry into the area by persons other than those necessary to perform the maintenance project, either by physically isolating the area or through scheduling.
- Verify or Post signs to prevent entry by unauthorized persons into the regulated area.
- Coordinate or Shut off or temporarily modify the air-handling system and restrict other sources of air movement.
- Use work practices, or other controls, such as wet methods, protective clothing, HEPA - vacuums, mini-enclosures, and glove bags, as set forth by this Policy to inhibit the spread of any released fibers.
- Clean all fixtures or other components in the immediate work area.
- Place the asbestos debris and other cleaning materials in a labeled, sealed, leak-tight containers. Ensure proper and legal disposal of materials.
- Ensure that clearance testing has been conducted prior to removing any containment.

The on-site supervisor shall have the responsibility of ensuring that all asbestos has been removed when O&M activities are complete. Responsibilities shall include removal of all asbestos associated with the project, and ensuring that asbestos debris or waste is not present outside the control area. All surfaces must be dry, clean, and absent of dust, all workers properly decontaminated, and all waste properly packaged, labeled and disposed. Appropriate air monitoring must be satisfactory (less than 0.01 fibers/cubic centimeter of air).

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## **XI. AIR MONITORING PROCEDURES**

### **A. Personal Air Monitoring**

Personal Air Monitoring shall be conducted on representative maintenance employees of UNCG during Class III Activity work as addressed in this Policy. Air monitoring will be conducted in accordance with OSHA's Asbestos Standard, [29 CFR 1926.1101](#).

### **B. Area Air Monitoring**

Area air monitoring shall be conducted in public areas during abatement and O&M activities. This shall be done to determine if work practices are effective in controlling fiber release in work and non-work areas and to fulfill the requirements of <0.01 fibers/cubic centimeter of air in public areas as set by the DHHS. All contractor led asbestos abatement projects conducted in public spaces require area air monitoring conducted by a third party.

### **C. Clearance Air Monitoring**

The use of clearance air monitoring will be determined on a project by project basis by the Asbestos Project Manager or the O&M Coordinator. Clearance monitoring shall be conducted in public areas where O&M activities or abatement are conducted. The clearance criteria will be based on a 2500 to 3000 liter air sample using 25 millimeter cassettes. Phase contrast microscopy (PCM) shall be used for analysis of the air samples. Transmission electron microscopy (TEM) may be used for analysis when deemed necessary. The clearance criteria will

be 0.01 fibers/cc as specified by DHHS. All contractor led asbestos abatement projects require clearance sampling conducted by a third party.

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## **XII. DISPOSAL PROCEDURES**

### **A. Sealing the Materials**

All asbestos containing materials and wastes shall be placed in two 6-mil disposal bags (or sealed in 2 layers of 6-mil poly) at the completion of the project. The bags shall be wiped down with damp rags to prevent contamination of the facility. If materials are heavy or pose a puncture hazard (i.e. shingles, wire, large amounts of floor tile), they shall be placed in disposal drums after being double bagged and sealed. All containers shall be properly labeled in accordance with [Section X](#), C of this plan.

### **B. Disposal**

All asbestos-containing materials generated by Class III Activity Workers shall be treated as hazardous waste and disposed of in accordance with [Section 0060](#) of the *UNCG Safety and Health Policy and Procedure Manual*. Asbestos-containing materials generated by contractors shall be disposed of in a EPA approved landfill. The North Carolina AHMB doe DEHNR shall be completed and used as a manifest.

All sealed and labeled waste shall be transported to the landfill in a covered vehicle. Care shall be taken not to puncture or break open any of the waste containers.

Upon completion of the disposal, the manifest shall be completed and returned to the O&M coordinator for filing and forwarding to the DHHS Coordinator.

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Appendix A

**THE UNIVERSITY OF NORTH CAROLINA at GREENSBORO**

**MEDICAL SURVEILLANCE PROGRAM**

**Purpose:**

The purpose of this program is to establish a Medical Surveillance Program for workers who are required to disturb ACM or PACM while conducting O&M activities.

**Scope:**

Due to the nature of asbestos removal and control work, potential employees for these jobs must be carefully screened and reviewed. If a potential employee appears to fulfill the requirements of the position applied for, he/she must then submit to a physical examination by UNCG approved, licensed physician.

**Application:**

This program is mandatory for all personnel employed in jobs where a potential exists for exposure to asbestos, and who are required to wear negative pressure respiratory protection.

**Frequency and Scope:**

Initially, employees shall submit to a medical examination within ten (10) working days after the thirtieth day of exposure due to assignment to asbestos-related jobs, but prior to fit testing and use of negative pressure respirators. Initial examinations will not be required if the employee has obtained an equivalent examination within the last twelve (12) months and submits all records and results, including the chest x-ray. Medical examinations prescribed under this program are provided at no cost to the employees. The employee's department will bear the cost of these medical examinations.

An employees will not be allowed to use a negative pressure respirator, or be assigned to an asbestos-related job until he/she has successfully completed the medical examination.

Medical examinations shall be repeated annually for each employee covered under this program. Examinations may be performed more frequently, if deemed necessary by the examining physician.

All medical examinations shall be performed by a licensed physician selected and approved by the O&M coordinator.

### **Information Supplied to Physician:**

### **Information Packets:**

Information packets shall be sent to those physicians approved by the O&M Coordinator to perform employee medical examinations. This information packet shall contain the following:

1. Letter of instruction to the Examining Physician
2. A copy of Medical Surveillance Program
3. A copy of 29 CFR Part 1926.1101 Asbestos Standard for the Construction Industry, with Appendices D, E, G, and I.

### **Initial Examination Request Packet:**

The O&M Coordinator shall provide approved physicians with an initial examination request packet for each employee(s) prior to the date of examination (See Initial Examination Request Packet include at the end of this program). This request packet shall contain the following:

- 1) Letter of Request for Initial Medical Examination(s), with information regarding:
  - The affected employee(s)'s duties, as they relate to potential asbestos exposure;
  - The employee(s) representative or expected asbestos exposure level;
  - A description of any personal protective and respiratory equipment to be used by the employee(s); and
  - Any information from previous medical examinations of the affected employee(s) ( not otherwise available to the examining physician).
- 2) The Initial Medical Questionnaire, Part 1.
- 3) The NC Division of Health Services Pre-Employment Statement (NC Form 6-OD, Part II).
- 4) Physician's Medical Examination Summary Form.
- 5) Any revisions to UNCG's Medical Surveillance Program.

### **Scope and Content of the Medical Examination:**

Initial Medical examinations shall include the following as a minimum:

- 1) The Initial Medical Questionnaire, Part I, as required by 29 CFR 1926.58 (medical and work history);
- 2) A Pre-Employment Statement, NC Form 6-OD, Part II, as required by North Carolina General Statute 97-60;
- 3) A physical examination directed to the pulmonary and gastrointestinal system, to include those tests deemed necessary by the examining physician and authorized by the university;

4) A chest roentgenogram (X-ray), per the following:

a) Chest X-rays shall be interpreted and classified in accordance with a professionally accepted classification system on a Roentgenographic Interpretation for CSD/NIOSH (M) 2.8.

b) X-rays shall be interpreted and classified by a certified B-reader, a board eligible/certified radiologist, or an experienced physician with known expertise in pneumoconioses.

c) All interpreters, whenever interpreting chest roentgenograms made under this program, shall have immediately available for reference a complete set of the ILO-U/C International Classification of Radiographs for Pneumoconioses, 1980.

5) Pulmonary function tests of Forced Vital Capacity (FVC) and Forced Expiratory Volume at one second (FEV1);

6) An evaluation of the employee's ability to wear the type(s) of respiratory protection required and perform his/her duties; and

7) A physician's Medical Examination Summary Form for each employee.

#### **Annual or Periodic Re-Examination:**

Annual or periodic medical examinations shall include the following, as a minimum:

1. The Periodic Medical Questionnaire, Part 2, as required by 29 CFR 1926.58;
2. A Re-Examination Record, NC Form 6-OD, Part I, as required by NC General Statute 97-60; and
3. All tests and evaluations listed above.

#### **Transmittal of Medical Records to the O & M coordinator:**

Following completion of the medical examinations the physician shall transmit all forms, X-rays, results and findings to the O & M coordinator. The physician shall not reveal in the written opinion or examination results, any specific findings or diagnoses unrelated to occupational exposure to asbestos. A copy of these records will be forwarded to the Office of Safety for proper maintenance of Medical Records.

The Physician's transmittals must include the following:

1. The physician's written opinion as to whether the employee has any detected medical conditions that would place the employee at an increased risk of material health impairment from exposure to asbestos; employee medical complaints related to exposure to asbestos; recommended limitations on the employee or on the use of personal protective equipment such as respirators; and a statement that the employee has been informed by the physician of the results of the medical examination and of any medical conditions that may result from asbestos exposure.
2. A copy of the completed Initial Medical Questionnaire or the Periodic Medical Questionnaire.

3. A copy of the completed NC Pre-Employee Statement or the NC Re-Examination Record Form.
4. The original chest X-ray and a copy of the employee's pulmonary function test (FVC and FEV1).

### **Submittals to be completed by the O & M Coordinator**

The O & M coordinator shall provide a copy of the physician's written opinion to the affected employee within thirty (30) days of receipt.

As required by North Carolina General Statute 97-60, the O & M coordinator shall obtain annual "Dusty Trades Cards" for each employee engaged in asbestos related work. To obtain Dusty Trades Cards, the O & M coordinator shall submit the following forms and records to the North Carolina Occupational Health Branch:

- 1) Pre-Employment Statement (Form 6-OD, Part II) or Re-Examination Record (NC form 6-OD, Part I)
- 2) The pre-employment or annual X-ray; and
- 3) These records will be submitted to:

Head, Occupational Health Branch

North Carolina Department of Human Resources

Post Office Box 2091

Raleigh, North Carolina 27602-2091

Phone: (919) 733-3680

### **Recordkeeping:**

The Office of Safety will maintain an accurate record for each employee subject to the Medical Surveillance Program. These records will be provided by the O & M Coordinator.

Each record shall include:

1. The name and social security number of the employee,
2. Physician's Medical Examination Summary Form,
3. Copies of the employee's Medical History Questionnaire,
4. NC pre-employment statement and/or re-examinations record form; chest x-rays; pulmonary function results; and the results of any other tests performed by the physician, and
5. Dusty Trade Cards.

The O & M coordinator will also forward to the Office of Safety, copies of the physician's information packets and any correspondence between UNCG and approved physicians.

All employee medical records shall be considered strictly confidential. Records shall be secured in a locked file storage cabinet.

Employee medical records shall be maintained and preserved for at least the duration of employment, plus thirty (30) years.

The O & M Coordinator and the Environmental Health and Safety shall ensure that each employee has access to his/her medical records upon written request by the employee. In addition, the O & M Coordinator will provide a copy of such records, upon written request of an affected former employee, his or her designated representative, or the Assistant Secretary of Labor, in accordance with 29 CFR 1910.20, Access to Employee Exposure and Medical Records.

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**THE UNIVERSITY OF NORTH CAROLINA at GREENSBORO**  
**RESPIRATORY PROTECTION PROGRAM FOR ASBESTOS**

**Purpose:**

The purpose of this program is to establish the Respiratory Protection Program for UNCG, O&M activities.

**Scope:**

The scope of the respiratory protection program presented here is limited to UNCG employees engaged in O&M activities. **The program is not to be utilized for contaminants other than asbestos.**

**Application:**

This program is mandatory for all personnel employed in jobs where a potential exists for exposure to asbestos, and who are required to wear respiratory protection.

**Program Administrator Responsibilities:**

O&M coordinator and on-site supervisor shall be responsible for the administration of this program for UNCG, as well as subsequent revisions which may be required by applicable governmental regulations, and shall have the authority to take prompt corrective measures to eliminate respiratory hazards in the workplace.

The Program Administrator will be responsible for the following:

- 1) Determine the respiratory hazards to which UNCG personnel may be exposed. Consult with the Department of Environmental Health and Safety.
- 2) Coordinate physical examinations to ensure that all employees with potential for exposure to respiratory hazards have been medically qualified to use respiratory protection by having satisfactorily passed a physical examination in accordance with UNCG's medical surveillance program.
- 3) Conduct respiratory protection training as required by the UNCG Respiratory Protection Program.
- 4) Ensure fit-testing is performed by Environmental Health and Safety.
- 5) Supervise respirator maintenance.
- 6) Enforcement of the requirements of this program through regular inspections and reporting the results of these inspections.
- 7) Prepare and maintain all documentation as required by this program.

## **Worker Responsibilities:**

Each maintenance worker engaged in O&M activities shall be responsible for compliance with all instructions and training in the use of respiratory protective equipment. The worker shall avoid damage to the equipment, and report immediately to his/her supervisor when a respirator is not working properly or has been damaged.

## **Medical Examinations:**

Employees shall be given medical examinations as required by UNCG's Medical Surveillance Program. Medical examinations must be completed before an employee is assigned a respirator.

All respirators cause some stress to the user. Employees with heart or lung problems may be at increased health risk merely by wearing a respirator. For this reason, UNCG requires that all maintenance workers who will be disturbing ACM or PACM pass annual medical examinations which address their ability to safely wear the type of respiratory protection required for their jobs. The following is the major stress factor associated with air purifying respirators.

Air purifying (negative pressure) respirators - breathing is more difficult due to a slight increase in the resistance to air flow through the filtering cartridges.

## **Training:**

Maintenance workers and supervisory personnel shall receive formal instruction in the use and limitation of respiratory protection at least every six months. This instruction shall cover:

- 1) Instruction in the nature of the hazards of asbestos and the potential health effects, and other commonly encountered health hazards.
- 2) How asbestos enters the body and its effects.
- 3) How cigarette smoking increases risk of adverse health effects due to asbestos exposure.
- 4) An explanation of why respirators are needed (e.g., where the use of engineering controls and other means of control are not completely effective in eliminating asbestos exposures).
- 5) A discussion of the consequences of not wearing respirators in exposure situations from legal, health, and disciplinary perspectives.
- 6) A discussion of the proper means of respiratory selection for use against asbestos exposure.
- 7) Instruction, training, and actual hands-on use of the respirator(s), to include fit testing, practice in wearing and adjusting the respirator, negative and positive pressure testing procedures, performing job functions, and the limitations of respirator use.
- 8) Inspection and maintenance of the respirator.
- 9) Respiratory cleaning and decontamination procedures.

- 10) Training in the recognition and handling of medical and other emergencies.
- 11) The purpose of medical examinations.

### **Respirator Selection:**

Respirator selection involve three basic steps:

- 1) Identification of the hazard
- 2) Evaluation of the hazard, and
- 3) Selection of the proper respirator.

The on-site supervisor is responsible for the identification, evaluation, and proper selection of respiratory protection during all phases of the O&M project. The Office of Safety should be consulted.

### **Hazard Identification:**

Respiratory hazards may take many different forms. Respirator selection is based on the hazard to which workers may be exposed. The following identified the three categories of respiratory hazards. This program only covers particulate contaminants and oxygen deficiencies.

*Particulate Contaminants:* Particulate contaminants are small particle, fibers or droplets in the air. There are three types of particulate contaminants:

- 1) Dusts are solid particles produced by processes such as grinding, crushing, and mixing. Asbestos fibers are a special type of dust contamination.
- 2) Mists are tiny liquid droplets given off when a substance evaporates and is then condensed in the air, or is released by spraying or atomization.
- 3) Fumes are tiny metallic particles given off when metals are heated.

*Oxygen Deficiency:* Oxygen deficiency is most commonly found in confined spaces with poor ventilation. Oxygen deficient areas are considered immediately dangerous to life or health. Oxygen starvation occurs very quickly and can cause serious injury to the brain and other injury, and ultimately death. A lack of oxygen may occur in two ways:

- 1) Oxygen may be "used up" by a chemical reaction.
- 2) Oxygen is "displaced" by another gas.

O&M activities shall not be conducted in an oxygen deficient atmosphere.

Respirators utilized during O&M activities shall be negative pressure air purifying respirators equipped with HEPA cartridges. The on-site supervisor shall then ensure no other hazards are present except asbestos.



#### Limitation of Air Purifying Respirators:

- 1) Air purifying respirators must never be worn in areas immediately dangerous to life or health.
- 2) Air purifying respirators must not be used if the gas or vapor to be protected against lacks adequate warning signs (odor, taste, or irritation). Warning signs are necessary so that the wearer can detect when the cartridges are saturated and the contaminant is passing into the respirator.
- 3) Air purifying respirators protect only against the specific particulates or gases for which they are approved, labeled, and color-coded. They may be worthless against other contaminants.

#### **Fit Testing:**

A respirator will not protect an employee unless the air being inhaled is supplied through the air purifying cartridges or an independent air supply source. If the facepiece is not properly sealed or the air supply connection are loose, contaminated air can easily enter the employee's respiratory system.

- 1) Respiratory protection will not be issued to an employee unless a proper fit can be obtained.
- 2) Employees required to wear respiratory protection will be fit tested only after satisfactory completion of their physical examination. Employees who do not pass this examination may not be employed in a job where respiratory protection is required.
- 3) Employees having facial hair such as beards, long mustaches or sideburns, which may interfere with the sealing surfaces of the respirator, may not be employed in jobs where such protection is required.
- 4) Employees wearing full facepiece respirators who also need prescription lenses for proper vision, must wear prescription glasses mounted inside the respirator faceshield.
- 5) Prior to actual use, each potential user of negative pressure respirator will be fit tested to determine the brand and model of respirator which will assure a satisfactory fit. Qualitative fit testing shall be performed initially for such employees, and repeated every six months thereafter, or more frequently if requested by the UNCG Office of Safety. Qualitative fit testing for negative pressure respirators shall be conducted according to 29 CFR 1926.58, Appendix C, Irritant Smoke Procedure. A record of each fit test shall be maintained.

Prior to each use, each employee shall perform a negative pressure and positive pressure test to ensure that there are no leaks in the facepiece to the face seal or any other part of the respirator. This requirement applies to all types of respirators.

#### Negative Pressure Test:

- 1) For negative pressure, air purifying respirators, the inlet opening of the respirator cartridge is blocked with the palm of the hand.

2) With the air inlet(s) blocked, the wearer should inhale gently and hold his/her breath for approximately ten (10) seconds.

3) If the facepiece collapses slightly and no inward leakage of air into the facepiece is detected, it can be reasonably assumed that the respirator has been properly donned and the exhalation valve and facepiece are not leaking.

### **Positive Pressure Test:**

1) For negative pressure, air purifying respirators, the exhalation valve is blocked off to prevent the intake of air.

2) With the exhalation valve blocked, the wearer should exhale gently for approximately ten (10) seconds.

3) If the respirator has been properly donned, a slight positive pressure can be detected inside the facepiece without any outward leakage of air between the sealing surface and the wearer's face.

### **Respirator Cleaning, Inspection and Repair Cleaning:**

Respirators issued for the exclusive use of each worker will be cleaned after each day's use. Cleaning will be done by each employee, under the direction of the project supervisor.

Respirators used by more than one worker must be cleaned and disinfected after each use.

### **Inspection:**

Respirators in use shall be inspected by the wearer before and after each use. In addition to this requirement, respirators in storage or those designated for "emergency use" must be inspected after each use, and at least monthly to ensure that they are in satisfactory working condition. Inspections and findings for "emergency use respirators" shall be documented.

Half- and full- facepiece respirators shall be inspected for:

- excessive dirt
- cracks, tears or holes
- distortions from improper storage
- cracked, scratched or loose-fitting lens (full facepiece)
- broken or missing mounting clips
- broken straps
- loss of elasticity
- broken or malfunctioning buckles or attachments
- excessive wear of the head harness
- detergent residue, dust particles, or dirt on the valve seat
- missing or defective valve covers

Air purifying cartridges shall be inspected for:

- proper cartridge for the containment
- missing or worn gaskets
- worn filter threads and facepiece threads
- cracks or dents in the filter housing

### **Repairs:**

Repair or maintenance shall be done only by trained and experienced individuals, with parts designed for the particular brand and model of respirator. Parts from one manufacturer may not be interchanged with parts from another manufacturer or style.

No attempt shall be made to replace components or to make adjustments or repairs beyond the manufacturer's recommendation.

### **Storage:**

After inspecting, cleaning, and necessary repairs/maintenance, respirators shall be stored to protect them against dust, sunlight, heat (140 degrees Fahrenheit), extreme cold (20 degrees Fahrenheit), excessive moisture, or damaging chemicals.

### **Respirator Monitoring and Program Evaluation:**

Periodic random inspections shall be conducted by the on-site supervisor to ensure that respirators are properly selected, used, stored, cleaned, and maintained. The Office of Safety shall evaluate the Respiratory Protection Program annually and make adjustments as needed, to reflect the evaluation results.

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Appendix E, Section 0070

<b>THE UNIVERSITY OF NORTH CAROLINA AT GREENSBORO ASBESTOS INVENTORY CONTROL REPORT</b>			
Prepared by: _____		Action Date: _____	
Action Taken:			
<input type="checkbox"/> Additional Testing			
<input type="checkbox"/> Abatement/Removal			
<input type="checkbox"/> Encapsulation			
<input type="checkbox"/> Other (describe)			
Building Name/Building Number: _____			
Room/Area: _____			
Work Description: _____			
Reason for Action: _____			
Quantity Removed: _____			
Monitor:	Name:	_____	
	Address:	_____	
Abatement Contractor:	Name:	_____	
	Address:	_____	
Landfill:	Name:	_____	
	Address:	_____	
DEHNR Permit #		Fee: \$	_____
Attachments (as applicable):			
<input type="checkbox"/> Permit		<input type="checkbox"/> Location Plan	
<input type="checkbox"/> Final Report		<input type="checkbox"/> Inspection Report	
<input type="checkbox"/> Waste Manifest		<input type="checkbox"/> Asbestos Free Warranty	
<input type="checkbox"/> Photographs		<input type="checkbox"/> Other (describe)	
<input type="checkbox"/> Design			
Routing:	Received EHS	:	Initial: _____ Date: _____
	Received Inventory Manager:		Initial: _____ Date: _____
	Entered in Inventory System:		Initial: _____ Date: _____
	Returned to EHS	:	Initial: _____ Date: _____
	Archived by EHS	:	Initial: _____ Date: _____