

**NDSU**  
**ASBESTOS SAFETY PLAN**

**TABLE OF CONTENTS**

1.0	INTRODUCTION
2.0	DEFINITIONS AND DESCRIPTIONS
3.0	OPERATIONS AND MAINTENANCE PROCEDURES FOR ACM
4.0	FIBER RELEASE EPISODES
5.0	DEMOLITION INFORMATION
6.0	REMARKS

**1.0 INTRODUCTION**

The Environmental Protection Agency (EPA) recommends an in-place management program for existing asbestos containing materials (ACM) in buildings. The asbestos safety plan serves to ensure that the day-to-day management and use 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.

The presence of asbestos in buildings does not mean that the health of the building occupants is endangered. When in good condition and undisturbed, ACMs do not pose a health risk to building occupants. Damaged ACMs or unauthorized or uncontrolled disturbance of ACMs may release asbestos fibers into the air. Studies have shown that individuals exposed to asbestos fibers over a long period of time have developed lung cancer, asbestosis, and mesothelioma with latency periods ranging from 10 to 40 years.

**REGULATIONS**

29 CFR 1910.134: OSHA RESPIRATORY PROTECTION STANDARD

29 CFR 1926:1001: ASBESTOS STANDARD

29 CFR 1926.1101: ASBESTOS IN CONSTRUCTION STANDARD

40 CFR 61: EPA NATIONAL EMISSION STANDARDS FOR HAZARDOUS AIR POLLUTANTS (NESHAP)

40 CFR 763: EPA ASBESTOS HAZARD EMERGENCY RESPONSE ACT (AHERA)

ND ADMINISTRATIVE CODE: 33-15-13 EMISSION STANDARDS FOR HAZARDOUS AIR POLLUTANTS

ND CENTURY CODE: 23 HEALTH AND SAFETY, CHAPTER 25, AIR POLLUTION CONTROL

**DESIGNATED PERSON**

NDSU recognizes the Associate Director for Environmental Health and Safety, University Police and Safety Office, as the "Designated Person". The responsibilities of the Designated Person include:

1. Ensure that the activities of any person who performs inspections or reinspections, develops or updates safety plans, or develops or implements response actions, including operations and maintenance, are carried out in accordance with applicable federal and/or state regulations to include meeting minimum training and licensing requirements.

2. Ensure that all custodial and maintenance employees are properly trained regarding asbestos issues, as required by applicable federal and/or state regulations.
3. Ensure that short-term workers who may come in contact with asbestos in a building are provided information regarding the locations for ACM and PACM.
4. Ensure that warning labels are posted in accordance with applicable federal and/or state regulations.

## TRAINING

Minimum training requirements for selected staff is provided as follows:

1. Custodial/maintenance staff likely to come into contact with ACMs shall attend a 2-hour asbestos awareness training course. Training sessions may be scheduled as needed by changes in custodial or maintenance staff.
2. Key Staff, as identified by NDSU, shall receive the 16-hour asbestos operations and maintenance training course, for response to emergency situations.
3. NDSU personnel performing asbestos work shall enroll in and comply with the requirements of the NDSU Respiratory Protection Program.

Training is to be documented and appropriate records, including certificates, are to be kept by the Designated Person.

## 2.0 DEFINITIONS AND DESCRIPTIONS

*Accessible* – when referring to ACM means that the material is subject to disturbance by building occupants or custodial or maintenance personnel in the course of their normal activities.

*Accredited or Accreditation* – when referring to a person or laboratory means that such person or laboratory is accredited in accordance with AHERA rules.

*Air erosion* – the passage of air over friable ACM which may result in the release of asbestos fibers.

*Asbestos* – includes chrysotile, amosite, crocidolite, tremolite, anthophyllite, actinolite, and any of these minerals that has been chemically treated and/or altered.

*Asbestos-containing materials (ACM)* – any material that contains more than 1% asbestos.

*Asbestos debris* – pieces of ACM that can be identified by color, texture, or composition, or means dust, if the dust is determined by an accredited inspector to be ACM.

*Category I ACM* – ACM packings, gaskets, resilient floor covering, and asphalt roofing products.

*Category II ACM* – ACM, excluding Category I non-friable ACM, that, when dry, cannot be crumbled, pulverized, or reduced to powder by hand pressure.

*Demolition* – the wrecking or taking out of any load-supporting structural member and any related razing, removing, or stripping of products.

*Disturbance* – activities that disrupt the matrix of ACM or PACM, crumble or pulverize ACM or PACM, or generate visible debris from ACM or PACM. This term includes activities that disrupt the matrix of ACM or PACM, render ACM or PACM friable, or generate visible debris. Disturbance includes cutting away small amounts of ACM or PACM, no greater than the amount, which can be contained in one standard sized glove bag or waste bag in order to access a building component. In no event shall the amount of PACM or ACM so disturbed exceed that which can be contained in one glove bag or waste bag which shall not exceed 60 inches in length and width.

*Encapsulation* – the treatment of ACM with a material that surrounds or embeds asbestos fibers in an adhesive matrix to prevent the release of fibers, as the encapsulant creates a membrane over the surface (bridging encapsulant) or penetrates the material and binds its components together (penetrating encapsulant).

*Enclosure* – an airtight, impermeable, permanent barrier around ACM to prevent the release of asbestos fibers into the air.

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

*Fiber Release Episode* – any uncontrolled or unintentional disturbance of ACM resulting in visible emission.

*Friable ACM* – any ACM that, when dry, can be crumbled, pulverized, or reduced to powder by hand pressure (including non-friable ACMs that have been rendered friable).

*Functional space* – a room, group of rooms, or homogeneous area (including crawlspaces or the space between a dropped ceiling and the floor or roof deck above), such as classrooms, a cafeteria, gymnasium, hallway, designated by a person accredited to prepare management plans, design abatement projects, or conduct response actions.

*Homogeneous Area* – an area of surfacing material, thermal system insulation, or miscellaneous material that is uniform in color and texture.

*Non-Friable ACM* – any ACM that, when dry, cannot be crumbled, pulverized, or reduced to powder by hand pressure.

*Operations and Maintenance Program* – a program of work practices to maintain friable ACM in good condition, ensure clean up of asbestos fibers previously released, and prevent further release by minimizing and controlling friable ACM disturbance or damage.

*PACM* – presumed asbestos containing material; laboratory analysis is required to confirm the absence of asbestos in the material.

*Preventative measures* – actions taken to reduce disturbance of ACM or otherwise eliminate the reasonable likelihood of the materials becoming damaged or significantly damaged.

*Regulated ACM* – friable ACM, Category I non-friable ACM that has become friable, Category I non-friable ACM that will be or has been subjected to sanding, grinding, cutting, or abrading, or Category II non-friable ACM that has a high probability of becoming or has become crumbled, pulverized, or reduced to powder by the forces expected to act on the material in the course of demolition or renovation operations.

*Removal* – the taking out or stripping of substantially all ACM from a damaged area, a functional space, or a homogeneous area in a building.

*Renovation* – altering a facility or one or more facility components in any way, including the stripping or removal of ACM from a facility component.

*Repair* – returning damaged ACM to an undamaged condition or to an intact state so as to prevent fiber release.

*Response action* – a method, including removal, encapsulation, enclosure, repair, operations and maintenance, that protects human health and the environment from friable ACM.

*Routine maintenance area* – an area, such as a boiler room or mechanical room that is not normally frequented by occupants and in which maintenance employees or contract workers regularly conduct maintenance activities.

*Vibration* – the periodic motion of friable ACM, which may results in the release of asbestos fibers.

### 3.0 **OPERATIONS AND MAINTENANCE PROCEDURES FOR ACM**

#### **FLOOR TILE AND/OR MASTIC**

Floor tile and/or mastic in good condition are non-friable. If damaged, broken, abraded, or otherwise rendered friable these materials may release asbestos fibers into the air. Protective mats should be used under chairs or other moveable objects that travel over sections of floor tile in an abrading manner.

**Replacement of Individual Tiles** – Broken floor tile should be removed using non-mechanical means, including heat, water, and/or hand tools. However, the use of heat may result in release of noxious vapors and/or cause a fire hazard if care is not exercised and the use water may result in water intrusion into adjoining building finishes and potential mold problems. Hand tools are the preferred method and can be used to pry up broken tiles. The exposed area of mastic should be HEPA vacuumed of dirt and debris prior to application of the new non-ACM floor tile. Asbestos containing waste should be containerized and disposed of in accordance with applicable regulations.

**Cleaning** – Floor tile should be maintained in a waxed condition. Abrading the floor surface should be avoided during cleaning activities and stripping should be conducted using wet methods.

**Removal** – When removal (excluding replacement of individual floor tiles) of floor tile and/or mastic is required, the removal and waste disposal should be conducted by a state licensed asbestos abatement contractor in accordance with applicable regulations.

#### CEILING TILE

Ceiling tile (excluding transite based) are generally friable and typically have a high potential for physical damage. Disturbing ceiling tile in any manner may release asbestos fibers into the air and should be avoided; if recurring disturbance of the material for maintenance reasons or other reasons is required, removal should be considered. Ceiling tile, especially if damaged, represent a concern for exposure where present; specific concern should be given to areas that are readily accessible to building occupants (such as high traffic hallways, etc.).

**Access above ceiling tile** – Due to the potential for damage, access above ceiling tile should be avoided when possible. When required, entrance to the work area should be restricted and workers should utilize personal protective equipment including a half-mask HEPA filtered respirator and a protective disposable suit. The ceiling tile to be raised off the grid should be easy to lift, without becoming snagged or caught on the grid. A HEPA vacuum should be held below the ceiling tile in a manner to collect any dust that may be emitted and workers should have amended water available to use in the event the ceiling tile is accidentally damaged. When complete, clean up should be conducted using wet methods and HEPA vacuuming; any asbestos containing waste should be containerized and disposed of in accordance with applicable regulations.

**Removal** – When removal of ceiling tile is required, the removal and waste disposal should be conducted by a state licensed asbestos abatement contractor in accordance with applicable regulations.

#### THERMAL SYSTEM INSULATIONS

Thermal system insulations are generally friable, but typically have a either a cloth or paper protective covering to maintain the integrity of the insulation material. Disturbing TSI in any manner may release asbestos fibers into the air and should be avoided; if disturbance of the material is required, the materials should be removed. TSI, especially if damaged or without a protective covering, represent a concern for exposure where present; specific concern should be given to areas that are readily accessible to building occupants (such as friable wall texture in public hallways, etc.). If TSI becomes damaged it should be repaired or, if beyond the point of repair, it should be removed.

**Repair** – To repair damaged TSI an encapsulant should be used. For small repairs a flexible encapsulant can be brushed on to the damaged areas and for larger repairs a plaster embedded cloth wrap material can be applied to repair the damaged areas. However, TSI showing damage from water leaks, sweating, etc. should be removed.

**Removal** – When removal of TSI is required, the removal and waste disposal should be conducted by a state licensed asbestos abatement contractor in accordance with applicable regulations.

### TRANSITE

Transite is a cement-board material used in refrigeration chambers, fume hoods, ceiling tiles, black lab countertops, etc. and when in good condition is non-friable. If damaged, broken, abraded, or otherwise rendered friable these materials may release asbestos fibers into the air.

**Drilling/Cutting** – Drilling, cutting, or performing any similarly abrading activities on transite should be avoided. When required, entrance to the work area should be restricted and workers should utilize personal protective equipment including a half-mask HEPA filtered respirator and a protective disposable suit. The area of transite to be disturbed should be misted with amended water and a HEPA vacuum should be held above it in a manner to collect any dust that may be emitted. When complete, clean up should be conducted using wet methods and HEPA vacuuming; any asbestos containing waste should be containerized and disposed of in accordance with applicable regulations.

Alternatively, disturbance to transite may be conducted by a state licensed asbestos abatement contractor in accordance with applicable regulations

**Removal** – When removal of transite is required, the removal may be conducted by un-fastening any clips, brackets, screws, etc. holding the transite in place and detaching the material whole (without any damage). The waste may be disposed of in a municipal landfill.

However, if the transite is damaged or can not be detached whole (without any damage) the removal and waste disposal should be conducted by a state licensed asbestos abatement contractor in accordance with applicable regulations.

### LINOLEUM

Linoleum is a multi-layered material, with an upper vinyl layer and a bottom fibrous layer. Asbestos is found in the bottom layer with the upper vinyl layer acting as an encapsulating material. The bottom fibrous layer is a friable material may release asbestos fibers into the air if exposed by damage to the upper vinyl layer.

**Cleaning** –Linoleum in good condition with an intact upper vinyl layer may be cleaned by normal methods exercising caution not to damage the upper vinyl layer.

**Removal** – When removal of linoleum is required, the removal and waste disposal should be conducted by a state licensed asbestos abatement contractor in accordance with applicable regulations.

## NON-FRIABLE SURFACING MATERIALS

Non-friable surfacing materials include gypsum wallboard, joint compound, hard plasters, some ceiling textures, some wall textures, etc. in good condition. The good condition of these materials should be maintained; drilling, cutting, or performing any similarly abrading activities should be avoided. Non-friable surfacing materials that become damaged become friable surfacing materials.

**Removal** – When removal of non-friable surfacing materials is required, the removal and waste disposal should be conducted by a state licensed asbestos abatement contractor in accordance with applicable regulations.

## FRIABLE SURFACING MATERIALS

Friable surfacing materials include fireproofing, soft plaster, acoustic plaster, acoustic texture, some wall textures, some ceiling textures, etc. in any condition and gypsum wallboard, joint compound, and hard plaster in damaged condition. Disturbing friable surfacing materials in any manner may release asbestos fibers into the air and should be avoided; if disturbance of the material is required, the materials should be removed. Friable surfacing materials, especially if damaged, represent a concern for exposure where present; specific concern should be given to areas that are readily accessible to building occupants (such as friable wall texture in public hallways, etc.).

**Removal** – When removal of friable surfacing materials is required, the removal and waste disposal should be conducted by a state licensed asbestos abatement contractor in accordance with applicable regulations.

## VERMICULITE INSULATION

Vermiculite insulation has been found to contain asbestos fibers as a contaminate along-side the expanded vermiculite ore, complicating bulk asbestos analysis methods. According to the US Environmental Protection Agency (EPA): “Due to uncertainties with existing testing techniques, it is best to assume that the material (vermiculite insulation) may contain asbestos.”

Vermiculite insulation has been identified in Electrical Engineering (A065) and Old Main (A001); both tested <1% for asbestos and are by definition non-ACM. However, due to the uncertainties surrounding these analytical results, they should be treated as ACM; access to building cavities in these buildings that may contain vermiculite insulation should be restricted.

EPA regulations concerning vermiculite insulation are expected to be revised in the near future; it is anticipated that new analytical methods will replace current methods for the bulk analysis of vermiculite insulation for asbestos. If new analytical methods are eventually required, the vermiculite insulation will need to be resampled and analyzed using the updated methods. If resampling indicates the vermiculite insulation to be >1% for asbestos, the material will be by definition ACM and must be treated as such.

**Clean-up (non-ACM)** – If vermiculite insulation has spilled from building cavities, clean-up may be conducted using methods that will not disperse asbestos fibers into the air, including wet methods and HEPA vacuuming.

Additionally, clean-up may be conducted by a state licensed asbestos abatement contractor in accordance with applicable regulations.

**Removal (non-ACM)** – When removal of vermiculite insulation is required; the removal may be conducted using methods that will not disperse asbestos fibers into the air, including wet methods and HEPA vacuuming.

Additionally, removal may be conducted by a state licensed asbestos abatement contractor in accordance with applicable regulations.

**Clean-up (ACM)** – If vermiculite insulation has spilled from building cavities, clean-up should be conducted by a state licensed asbestos abatement contractor in accordance with applicable regulations.

**Removal (ACM)** – When removal of vermiculite insulation is required, the removal should be conducted by a state licensed asbestos abatement contractor in accordance with applicable regulations.

#### OTHER ASBESTOS CONTAINING MATERIALS

**Non-Friable ACM** – The concern with other non-friable ACM is maintaining them in good condition. If damaged, broken, abraded, or otherwise rendered friable any ACM may release asbestos fibers into the air. When removal of non-friable materials is required, the removal and waste disposal should be conducted by a state licensed asbestos abatement contractor in accordance with applicable regulations.

**Friable ACM** – Disturbing friable ACM in any manner may release asbestos fibers into the air and should be avoided; if disturbance of the material is required, the materials should be removed. Friable ACM, especially if damaged, represent a concern for exposure where present; specific concern should be given to areas of friable ACM that are readily accessible to building occupants (such as friable window glazing in classrooms, etc.). When removal of friable ACM is required, the removal and waste disposal should be conducted by a state licensed asbestos abatement contractor in accordance with applicable regulations.

#### 4.0 **FIBER RELEASE EPISODES**

Any uncontrolled or unintentional disturbance of ACM resulting in visible emission is considered a fiber release episode. Fiber release episodes should be documented and appropriate records should be kept by the Designated Person.

**Minor fiber release episode (impacting <3ft<sup>2</sup>)** – The impacted area should be evacuated and isolated to prevent unauthorized access; HVAC systems supplying the area should be shut down or diffusers and returns serving the impacted area should be sealed off. The clean-up should be



conducted using methods that will not disperse asbestos fibers into the air, including wet methods and HEPA vacuuming.

Additionally, clean-up may be conducted by a state licensed asbestos abatement contractor in accordance with applicable regulations.

**Major fiber release episode (impacting >3ft<sup>2</sup>)** – The impacted area should be evacuated and isolated to prevent unauthorized access; HVAC systems supplying the area should be shut down or diffusers and returns serving the impacted area should be sealed off. The clean-up and waste disposal should be conducted by a state licensed asbestos abatement contractor in accordance with applicable regulations.

## 5.0 **RENOVATION/DEMOLITION INFORMATION**

Prior to any renovation/demolition project, all ACMs to be disturbed during the project must be identified as one of the following NESHAP categories: Regulated ACM (RACM), Category I ACM (CAT I), Category II ACM (CAT II). Refer to section 2.0 DEFINITIONS AND DESCRIPTIONS for further information on the NESHAP categories.

**For renovation** – RACM, CAT I, and CAT II materials must be abated prior to disturbance; the removal and waste disposal should be conducted by a state licensed asbestos abatement contractor in accordance with applicable regulations. Of note, transite may be removed by alternative methods; refer to the TRANSITE information in section 3.0 OPERATIONS AND MAINTENANCE PROCEDURES for further information.

**For demolition** – RACMs, damaged CAT I materials, damaged CAT II materials, and CAT II materials with a high probability of being crumbled, pulverized, or reduced to a powder during demolition must be abated prior to disturbance; the removal and waste disposal should be conducted by a state licensed asbestos abatement contractor in accordance with applicable regulations.

CAT I materials in good condition may remain in place during the demolition or may be abated prior to disturbance; the removal and waste disposal should be conducted by a state licensed asbestos abatement contractor in accordance with applicable regulations.

CAT II materials, with a low probability of being crumbled, pulverized, or reduced to a powder during demolition may remain in place during the demolition or may be abated prior to disturbance; the removal and waste disposal should be conducted by a state licensed asbestos abatement contractor in accordance with applicable regulations.

Furthermore, if the demolition debris is to be recycled or if the demolition is to include burning, all CAT I and CAT II materials must be abated; the removal and waste disposal should be conducted by a state licensed asbestos abatement contractor in accordance with applicable regulations.

## 6.0 **REMARKS**

Current regulations allow for the composite sampling of ACM joint compound and non-ACM gypsum wallboard to test for possible composite results of <1% for asbestos. If the composite samples test <1% for asbestos, the wall systems may be treated as non-ACM for removal purposes; however, as the joint compound is an ACM engineering controls should be utilized as appropriate to prevent worker exposure. If the composite samples test >1% for asbestos, the wall systems must be treated as ACM for all purposes.