



# **Asbestos Management Plan**

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## Contact Information

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## Purpose

The purpose of this program is to summarize Michigan State University's asbestos management procedures for the university community of faculty, staff, students, visitors, and external contractors and consultants on campus. The goal of a management plan is to prevent the release of asbestos fibers until the asbestos-containing material (ACM) in a building is scheduled to be professionally removed in advance of maintenance, renovation, or demolition activities. This plan outlines the university's procedures and best practices regarding the day-to-day management of asbestos and the planned or accidental disturbance of asbestos. This program is not a substitute for proper asbestos training and is not a complete reference for asbestos information. Please consult the "Applicable Regulations" section within this management plan or contact the Asbestos Program Manager for more information.

## Introduction

Asbestos is a general name for a group of naturally occurring minerals composed of small fibers. These fibers are very strong and resistant to heat and chemicals. Asbestos is common in many materials used in buildings constructed prior to 1980, and was added to many older building materials including spray-on fireproofing, floor tiles, ceiling tiles, insulation on pipes and ducts, acoustical and decorative coatings, and roofing materials. These types of building materials are presumed to contain asbestos unless testing has proven otherwise. Michigan State University (MSU) has a large number of buildings that were constructed before 1980.

### Sample List of Asbestos Containing Materials

The following list of known ACM is from the EPA and is intended to show the types of materials that have been found to contain asbestos. Each building and material is different and the list below is NOT exhaustive. For building specific information see the Asbestos Program website listed in the "Contact Information" section of this management plan. Questions regarding a building survey or specific material should be directed to the APM.

Cement Pipes	Construction Mastics (floor tile, carpet, ceiling tile, etc.)	Thermal Paper Products
Elevator Brake Shoes	Heating and Electrical Ducts	Packing Materials (for wall/floor penetrations)
Cement Wallboard	Acoustical Plaster	Fire Doors
HVAC Duct Insulation	Electrical Panel Partitions	High Temperature Gaskets
Cement Siding	Decorative Plaster	Caulking/Putties
Boiler Insulation	Electrical Cloth	Laboratory Hoods/Table Tops
Asphalt Floor Tile	Textured Paints/Coatings	Adhesives
Breaching Insulation	Electric Wiring Insulation	Laboratory Gloves/Equipment
Vinyl Floor Tile	Ceiling Tiles and Lay-in Panels	Wallboard
Ductwork	Chalkboards	Fire Blankets
Flexible Fabric Connections	Spray-Applied Insulation	Joint Compounds
Vinyl Sheet Flooring	Roofing Shingles	Fire Curtains
Cooling Towers	Blown-in Insulation	Vinyl Wall Coverings
Flooring Backing	Roofing Felt	Elevator Equipment Panels
Pipe Insulation (corrugated air-cell, block, etc.)	Fireproofing Materials	Spackling Compounds
Base Flashing	Taping Compounds (thermal)	

The mere 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 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, it is also illegal. When materials are exposed or disturbed, asbestos fibers can become airborne and pose an inhalation hazard. Studies have shown that individuals exposed to asbestos fibers over a long period of time may develop lung cancer, Asbestosis (a fibrotic scarring of the lungs), and Mesothelioma (a cancer of the lining of the chest or abdominal cavity). The typical latency periods for these diseases range from 10-40 years.

Instead of removing all asbestos containing material upon discovery, the Environmental Protection Agency (EPA) recommends an in-place management program for the existing asbestos materials. EPA only requires asbestos removal in order to prevent public exposure to asbestos, such as during building renovation or demolition. Michigan State University has maintained an effective in-place management program for several years. 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. In order to follow this guideline, the university's management program involves identifying existing asbestos and maintaining it in place in good condition.

## Definitions

**Adequately wet** means sufficiently mix or penetrate with liquid to prevent the release of particulates. If visible emissions are observed coming from asbestos-containing material, then that material has not been adequately wetted. However, the absence of visible emissions is not sufficient evidence of being adequately wet.

**Aggressive Final Clearance** means a final collection of air samples where floors, ceiling, and walls are swept with the exhaust of a one (1) horsepower leaf blower to dislodge any remaining dust and stationary fans are used (one for each 10,000 ft<sup>3</sup> of worksite) to direct air toward the ceiling to create a "worst case" sampling scenario.

**Aggressive method** means removal or disturbance of building material by sanding, abrading, grinding or other method that breaks, crumbles, or disintegrates intact ACM.

**Amended water** means water to which surfactant (wetting agent) has been added to increase the ability of the liquid to penetrate ACM.

**APM** means asbestos program manager.

**Asbestos** includes chrysotile, amosite, crocidolite, tremolite, anthophyllite, actinolite, and any of these minerals that has been chemically treated and/or altered. For purposes of this management plan, "asbestos" includes PACM, as defined below.

**Asbestos-containing material (ACM)** means any material containing more than one percent asbestos.

**Asbestosis** is the scarring of lung tissue resulting from exposure to asbestos.

**Authorized person** means any person authorized by the employer and required by work duties to be present in regulated areas.

**Building/facility owner** is the legal entity, including a lessee, which exercises control over management and record keeping functions relating to a building and/or facility in which activities covered by this standard take place.

**Category I Non-Friable ACM** means asbestos containing packings, gaskets, resilient floor covering, and asphalt roofing products containing more than 1% asbestos that cannot when dry be crumbled, pulverized, or reduced to powder by hand pressure.

**Category II Non-Friable ACM** means any material, excluding Category I non-friable ACM, containing more than 1% asbestos that cannot when dry be crumbled, pulverized, or reduced to powder by hand pressure.

- Class I asbestos work** means activities involving the removal of TSI and surfacing ACM and PACM.
- Class II asbestos work** means activities involving the removal of ACM which is not thermal system insulation or surfacing material. This includes, but is not limited to, the removal of asbestos-containing wallboard, floor tile and sheeting, roofing and siding shingles, and construction mastics.
- Class III asbestos work** means repair and maintenance operations, where “ACM”, including TSI and surfacing ACM and PACM may be disturbed.
- Class IV asbestos work** means 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.
- Clean room** means an uncontaminated room having facilities for the storage of employees’ street clothing and uncontaminated materials and equipment.
- Closely resemble** means that the major workplace conditions which have contributed to the levels of historic asbestos exposure are no more protective than conditions of the current workplace.
- Competent person** means, in addition to the definition in 29 CFR 1926.32 (f), one who is capable of identifying 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): in addition, for Class I and Class II work who is specially trained in a training course which meets the criteria of EPA’s Model Accreditation Plan (40 CFR part 763) for supervisor, or its equivalent and, for Class III and Class IV work, who is trained in a manner consistent with EPA requirements for training of local education agency maintenance and custodial staff as set forth at 40 CFR 763.92 (a)(2).
- Critical barrier** means one or more layers of plastic sealed over all openings into a work area or any other similarly placed physical barrier sufficient to prevent airborne asbestos in a work area from migrating to an adjacent area.
- Decontamination area** means an enclosed area adjacent and connected to the regulated area and consisting of an equipment room, shower area, and clean room, which is used for the decontamination of workers, materials, and equipment that are contaminated with asbestos.
- Demolition** means the wrecking or taking out of any load-supporting structural member of a facility together with any related handling operations or the intentional burning of any facility.
- DEQ-AQD** means the Michigan Department of Environmental Quality Air Quality Division, which is responsible for enforcing the NESHAP Asbestos Standards
- Disturbance** means 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 ACM or PACM 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.
- DLARA** means Michigan Department of Licensing and Regulatory Affairs which maintains the MIOSHA Asbestos Program.
- EAS** means the Engineering and Architectural Services department within the MSU Physical Plant.
- Emergency renovation operation** means 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** means that exposure to airborne asbestos that would occur if the employee were not using respiratory protective equipment.
- Enclosure** means an airtight, impermeable barrier designed to prevent the release of asbestos fibers into the air.
- Equipment room (change room)** means a contaminated room located within the decontamination area that is supplied with impermeable bags or containers for the disposal of contaminated protective clothing and equipment.

**Facility** means any institutional, commercial, public, industrial, or residential structure, installation, or building (including any structure, installation, or building containing condominiums or individual dwelling units operated as a residential cooperative, but excluding residential buildings having four or fewer dwelling units); any ship; and any active or inactive waste disposal site. For purposes of this definition, any building, structure, or installation that contains a loft used as a dwelling is not considered a residential structure, installation, or building. Any structure, installation or building that was previously subject to this subpart is not excluded, regardless of its current use or function.

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

**Friable** means material that when dry, may be crumbled, pulverized, or reduced to powder by hand pressure.

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

**Grinding** means to reduce to powder or small fragments and includes mechanical chipping or drilling.

**High-efficiency particulate air (HEPA) filter** means a filter capable of trapping and retaining at least 99.97 percent of all mono-dispersed particles of 0.3 micrometers in diameter.

**Homogeneous area** means an area of surfacing material or thermal system insulation that is uniform in color and texture.

**Industrial hygienist** means a professional qualified by education, training, and experience to anticipate, recognize, evaluate and develop controls for occupational health hazards.

**Inspection** means an activity undertaken in a school building, or a public and commercial building, to determine the presence or location, or to assess the condition of, friable or non-friable asbestos-containing building material (ACBM) or suspected ACBM, whether by visual or physical examination, or by collecting samples of such material.

**Intact** means that the ACM has not crumbled, been pulverized, or otherwise deteriorated so that the asbestos is no longer likely to be bound with its matrix.

**Mesothelioma** is a rare form of cancer related to asbestos exposure.

**Miscellaneous Material** means building material on structural components, structural members or fixtures, such as floor and ceiling tiles, and does not include surfacing material or thermal system insulation.

**Negative Exposure Assessment** means a demonstration by the employer that employee exposure during an operation is expected to be consistently below the PELs.

**Owner or Operator of a Demolition or Renovation Activity** means any person who owns, leases, operates, controls, or supervises the facility being demolished or renovated or any person who owns, leases, operates, controls, or supervises the demolition or renovation operation, or both.

**PACM** means "presumed asbestos containing material".

**Permissible Exposure Limit (PEL)** is the maximum allowable exposure to asbestos at 0.1 fibers per cubic centimeter of air as an eight (8) hour time-weighted average

**PIA** means Planner Inspector Analyst, a position within the MSU Physical Plant. The PIA for Asbestos is responsible for in-house asbestos contracting as defined below.

**Presumed Asbestos Containing Material** means thermal system insulation and surfacing material found in buildings constructed no later than 1980.

**Project Designer** means a person who has successfully completed the training requirements for an abatement project designer established by 40 U.S.C. Sec. 763.90(g).

**Regulated area** means: an area established by the employer to demarcate areas where Class I, II, and III asbestos work is conducted, and any adjoining area where debris and waste from such asbestos work accumulate; and a work area within which airborne concentrations of asbestos, exceed or there is a reasonable possibility they may exceed the permissible exposure limit. Requirements for regulated areas are set out in paragraph (e) of this section.

**Regulated asbestos-containing material (RACM)** means (a) Friable asbestos material, (b) Category I non-friable ACM that has become friable, (c) Category I non-friable ACM that will be or has been subjected to sanding, grinding, cutting, or abrading, or (d) 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 regulated by 40 CFR 61 (NESHAP).

**Removal** means all operations where ACM and/or PACM is taken out or stripped from structures or substrates, and includes demolition operations.

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

**Repair** means overhauling, rebuilding, reconstructing, or reconditioning of structures or substrates, including encapsulation or other repair of ACM or PACM attached to structures or substrates.

**Surfacing material** means material that is sprayed, troweled-on or otherwise applied to surfaces (such as acoustical plaster on ceilings and fireproofing materials on structural members), or other materials on surfaces for acoustical, fireproofing, and other purposes.

**Thermal system insulation (TSI)** means material applied to pipes, fittings, boilers, breeching, tanks, ducts or other structural components to prevent heat loss or gain.

**Visible Emissions** means any emissions, which are visually detectable without the aid of instruments, coming from RACM or asbestos-containing waste material, or from any asbestos milling, manufacturing, or fabricating operation. This does not include condensed, uncombined water vapor.

## Applicable Regulations

The MSU Asbestos Management Plan has been established to comply with the following regulations:

- ❖ Asbestos for General Industry: [MIOSHA Part 305 and 29 CFR 1910.1001](#)
- ❖ Asbestos Standards for Construction: [MIOSHA Part 602 and 29 CFR 1926.1101](#)
- ❖ National Emissions Standards for Hazardous Air Pollutants (NESHAPS): [40 CFR 61, Subpart M](#)
- ❖ Asbestos Model Accreditation Plan (MAP): [40 CFR 763 \(Appendix C to Subpart E\)](#)
- ❖ Subchapter C: Hazardous Materials Regulations [49 CFR 171-185](#)
- ❖ Asbestos Workers Accreditation Act: [Michigan Act 440, P.A. of 1988](#)
- ❖ Asbestos Abatement Contractors Licensing Act: [Michigan Act 135, P.A. of 1986](#)

The plan also includes information from the following reference materials:

- ❖ Guidance for Controlling Asbestos-Containing Materials in Buildings, (EPA Purple Book)
- ❖ Managing Asbestos In Place, A Building Owners Guide to Operations and Maintenance Programs for Asbestos-Containing Materials, (EPA Green Book)
- ❖ Asbestos Hazard Emergency Response Act (AHERA) [40 CFR 763 Subpart E](#)
- ❖ Standard Practice for Visual Inspection of Asbestos Abatement Projects, ASTM E1368 - 05e1
- ❖ Guidance Manual: Asbestos Operations & Maintenance Work Practices, National Institute of Building Sciences, 2nd Edition
- ❖ DEQ-AQD [Asbestos NESHAP Fact Sheet](#)
- ❖ Guidance for [Submitting Notification of Renovation and/or Demolition](#) Projects Subject to NESHAP, 40 CFR 61, Subpart M

These materials are available at the links above or from the Asbestos Program Manager.

## **Responsibilities**

All campus members, including faculty, staff, students, visitors, and external contractors and consultants are expected to follow the requirements outlined in the *General Asbestos Compliance* section. In addition, in order to increase the effectiveness of this asbestos management program, the following responsibilities are specifically designated:

### **University Employees**

1. Do not clean, damage, disturb, or remove asbestos-containing materials unless trained and authorized.
2. Contact your supervisor to have a suspect asbestos containing material identified.
3. Contact your supervisor to report suspected asbestos debris or damaged asbestos containing materials.
4. Attend appropriate initial and refresher trainings as directed by your supervisor and the APM.

### **Supervisors, Deans, Directors, Chairs**

1. Assure that information and procedures contained within this Asbestos Management Plan are strictly followed by all personnel.
2. Notify the APM when new employees are hired so they may be properly trained, if necessary. If a new employee will perform housekeeping activities or otherwise work around ACM or PACM, ensure they receive initial two-hour asbestos awareness training.
3. Contact the APM or the Physical Plant for testing of suspect materials encountered during routine operations.
4. Immediately contact the APM or the Physical Plant for clean up/repair if an employee reports that ACM has been discovered in a damaged state or was accidentally disturbed.
5. Submit a physical plant service request to the PIA for Asbestos if materials containing asbestos require disposal.
6. Ensure that authorized employees are following proper work procedures while handling ACM and if an NEA is relied upon that it is listed as "current" by the APM.
7. Coordinate annual air sampling with the APM to keep Negative Exposure Assessments (NEA's) current.

### **Surplus Staff**

1. Collect surplus PACM materials from campus only after inspection and approval from the APM.
2. Do not resell any materials which may contain ACM unless specifically authorized by the APM.
3. Maintain training consistent with Class IV operations as defined in this management plan.

### **EAS Design Representatives**

1. Coordinate with the Asbestos Program Manager and Physical Plant Building Services PIA when renovations and demolitions are planned to obtain existing asbestos surveys and to determine what level of project design and specification documents may be required.
2. Ensure that funding for all environmental considerations, including abatement and environmental consultant services are accounted for in project budgets.
3. Provide the APM with a copy of all building survey and project specification information for abatement activities as they are obtained.

### **EAS Construction Representatives**

1. Ensure that only prequalified asbestos abatement contractors perform asbestos abatement activities.
2. Ensure proper notifications are made regarding asbestos abatement projects.
3. Stop work immediately if additional ACM or PACM materials are encountered at a work site and contact the APM or PIA for Asbestos for further sampling.
4. Notify the APM of any asbestos related incidents at MSU construction sites.
5. Assist APM and PIA for Asbestos in stopping work at abatement sites if requested.
6. If a regulatory agent requests to see an abatement work area immediately contact the APM to be present.

7. Provide the APM with a copy of all air sampling results from abatement activities as they are obtained.

#### **External Project Managers, General Contractors, and Sub-Contractors**

1. Ensure that all employees have received asbestos awareness training including information on the presence, quantity, and location of site-specific materials.
2. Do not impact ACM or PACM unless specifically trained and authorized to do so.
3. Stop work immediately and contact the assigned EAS Construction Representative if a previously unidentified ACM or PACM is discovered.
4. Communicate hazards related to asbestos work to all other trades on a project site.
5. Engage only prequalified asbestos abatement contractors for asbestos abatement activities.

#### **External Asbestos Abatement Contractors**

1. Follow all provisions of the applicable regulations governing asbestos operations, project-specific asbestos abatement specifications, and this management plan.
2. Annually apply for prequalification to the APM to receive or maintain prequalified status.
3. Maintain Type-II contractor licensure from MDLARA as well as appropriate insurance coverage.
4. Use only individuals currently accredited as Asbestos Workers or Asbestos Contractor/Supervisors by MDLARA to perform asbestos abatement.
5. Receive approval from the APM before requesting a regulatory variance from any state agency.

#### **External Environmental Consultants**

1. Use only individuals currently accredited as Asbestos Building Inspectors by MDLARA to perform *type I* and *type II* asbestos inspections.
2. Use only individuals currently accredited as Asbestos Project Designers by MDLARA to create specifications and/or project documents for asbestos abatement activities.
3. Maintain proficient laboratory participation in the NIOSH/AIHA proficiency in analytical testing (PAT) program and/or Asbestos Analyst Registry (AAR) program.
4. All on-site personnel shall have asbestos abatement contractor/supervisor or competent person training, and have satisfactorily completed a NIOSH 582 or equivalent airborne fiber counting course.
5. Ensure that asbestos abatement work is conducted in accordance with all applicable regulations, the project specific specification, and this management plan. If non-compliant work practices are observed, the air monitoring professional shall take corrective action on-site and notify the APM and the appropriate Project Representative.
6. Conduct on-site air monitoring in strict accordance with the NIOSH 7400 method or OSHA reference method, including all QA/QC provisions.

#### **Physical Plant Planner/Inspector/Analyst (PIA) for Asbestos**

1. Sample suspect materials as needed/requested.
2. Submit copies of all sample results (including copy of laboratory data) to APM.
3. Maintain open contracts for Asbestos Abatement Contractors and Industrial Hygiene Consultants to facilitate the removal of ACM from campus properties as needed.
4. Respond to reports of accidental disturbances for clean up or repair.
5. Notify APM prior to conducting any abatement activities.
6. Send copies of all air monitoring results from abatement activities to APM.
7. Provide technical review of project design and specifications for asbestos abatement on "Purchase Order" and "Project Request" projects.

#### **EHS Asbestos Program Manager (APM)**

1. Maintain the Asbestos Management Program and revise as necessary.
2. Provide or coordinate necessary asbestos training for MSU staff.
3. Conduct asbestos identification activities.

4. Maintain records of all building surveys, material sampling, training, abatement activities, air monitoring, and negative exposure assessments.
5. Provide technical review of project design and specifications for asbestos abatement on “Major” and “Minor” projects.
6. Annually prequalify asbestos abatement contractors for asbestos abatement activities on MSU properties.
7. Investigate asbestos concerns of students, faculty, staff, contractors, building occupants, and visitors.
8. Periodically monitor activities at asbestos abatement job sites for compliance to applicable regulations.
9. Review State of Michigan project notifications.
10. Approve or deny regulatory variance requests from contractors.
11. Meet with all regulatory agencies as needed for inspections and asbestos related inquiries.

## **General Asbestos Compliance**

The DEQ-AQD *NESHAP Standards* as well as the MIOSHA *Asbestos Standards for Construction* and *Asbestos for General Industry* apply to all individuals working on any Michigan State University owned property and are incorporated by reference in to this program. For further detail please see the online version of these regulations posted under “Applicable Regulations” or contact the Asbestos Program Manager. The material presented in this portion of the management plan addresses Michigan State University specific requirements for asbestos related work.

## **Asbestos Surveys**

*Type I* asbestos surveys have been conducted for all campus buildings in compliance with the regulations set forth in the OSHA General Industry Standard for Asbestos, 29 CFR 1910.1001. The purpose of these surveys is to determine the presence, location and quantity of ACM. During the survey, representative samples of each suspect material are taken and analyzed at an accredited independent laboratory. If no sample information is available for thermal system insulation (TSI), sprayed-on or troweled-on surfacing materials, or asphalt and vinyl flooring installed before 1981, these materials must be treated as asbestos containing materials. Copies of completed surveys are maintained by the Department of Environmental Health and Safety. Records are available online at the asbestos program website and also by contacting the Asbestos Program Manager.

When a building is scheduled for major renovation or demolition, a *Type II* survey must be conducted to comply with the requirements of the National Emission Standards for Hazardous Air Pollutants (NESHAP). 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.

## **Training**

Training is required for all employees who perform Class I through IV asbestos work. The training must meet the requirements of the EPA Model Accreditation Plan (MAP). No untrained workers are to disturb any amount of asbestos. No student workers are to disturb any amount of asbestos. MSU does not provide training to non-university personnel. Contact the Department of Environmental Health and Safety for training details. The following are the basic training requirements for the different types of asbestos work:

Class I asbestos work involves the removal of TSI and surfacing ACM and presumed asbestos-containing material (PACM). Training for Class I work is either 32 hours (asbestos worker), or 40 hours (contractor/supervisor and function 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 the removal of 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 may be 8 hours of 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 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 4-hour refresher course.

Class IV asbestos work involves maintenance and custodial activities during which employees contact but do not disturb ACM and PACM. 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. The annual refresher training is available on-line through the EHS website at [http://www.hazmat.msu.edu/ASBR/ASBR\\_intro.htm](http://www.hazmat.msu.edu/ASBR/ASBR_intro.htm).

### **Exposure Assessments and Monitoring**

Air monitoring is conducted by an independent consulting firm during Class I-III asbestos work. This 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 consulting firm or at the request of MSU Environmental Health and Safety personnel unless otherwise specified in this management plan or project specifications. 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 MSU Physical Plant and the Environmental Health and Safety Department.

#### Negative Exposure Assessments

A Negative Exposure Assessment 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 work place 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. An NEA must rely on data collected within the previous 12 months and is not transferrable between companies.

Negative exposure assessments have been established for routine operations and maintenance (O&M) operations conducted by MSU employees and are maintained by the APM. The supervisor is responsible for ensuring the NEA is listed as "current" before assigning an employee to a job task which relies on that information. NEA status will be available to MSU employees via the Asbestos Program website.

#### 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:

- Task specific exposure monitoring (personal sampling) for each task and on at least 25% of the work force.
- Task specific 30 minute short term excursion limit (STEL) personal samples at least once per day, per task.
- 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.

#### 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 per 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. 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 enclosure or critical barrier enclosure 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 special circumstances (i.e. dusty environments).

While the State of Michigan requires a clearance level of 0.05 fibers per cubic centimeter of air (f/cc) in all asbestos removal projects involving more than 10 linear or 15 square feet of friable asbestos, all projects on MSU owned properties must use the clearance level of 0.01 f/cc. Where TEM samples are collected an average clearance level of 70 structures per square millimeter (70 s/mm<sup>2</sup>) must be met. If any of the requirements of the final clearance monitoring section cannot be met, a variance must be requested from the APM. This request must include the specific reasons for the variance and the proposed alternative. The APM will approve or deny this request in writing.

### **Respiratory Protection**

All university employees must be provided with proper protective clothing and respirators when assigned to work in Class I-III asbestos work or Class IV work that takes place in a regulated area. The university maintains a respiratory protection program for its employees in accordance with MIOSHA Respiratory Protection Standard Part 451 (OSHA 29 CFR 1910.134). Contact the Department of Environmental Health and Safety's Occupational Safety Team for information on the MSU respirator program.

### **Housekeeping**

All surfaces shall be maintained as free as practicable of ACM waste, debris, and accompanying dust.

Surfaces contaminated with asbestos may not be cleaned using compressed air. Do not drill holes, hammer nails into, hang objects from, touch with curtains, 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 which has sufficient finish so the pad doesn't contact the flooring material. Broken ACM floor tiles should only be removed by properly trained personnel.

Ceiling tiles should not be moved or replaced until it is confirmed that 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.

### **Medical Surveillance**

The University maintains a medical surveillance program for all employees who are engaged in Class I-III work for a combined total of more than 30 days per year or are exposed at or above the permissible exposure limit. This medical surveillance consists of 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, and pulmonary function tests. This exam is offered annually at no charge to affected employees. For employees otherwise required to wear a respirator, a physician will determine that the employees are able to perform the work and use the equipment. For further information on medical surveillance, contact your supervisor or the Office of the University Physician at (517) 353-9137.

**Recordkeeping**

Specific records must be kept regarding asbestos related activities, including but not limited to:

1. Signed manifests returned from the asbestos disposal facilities shall be maintained by the EHS APM with the following exceptions:
  - a. Manifests generated on Engineering and Architectural Services (EAS) projects will be maintained in the Meridian project management database.
  - b. Manifests for all projects managed by the maintenance services group will be kept by the PIA for Asbestos
2. Training records, including employee name, employee ID number, job title, name of training, date(s) of training, and instructor name shall be maintained by the EHS APM.
3. Exposure monitoring records including employee name, employee ID number, job title, task, results of monitoring, testing protocol, and date of testing shall be maintained by the EHS APM.
4. Medical records are kept on file by the University Physicians office.
5. Other records or information as required by this management plan or existing regulations shall be maintained by the EHS APM as necessary.

**Notifications and Communication**

Building Occupants & Contractors

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

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

Notification to the State of Michigan

All contractors are required to notify the Michigan Department of Environmental Quality, Air Quality Division (DEQ-AQD) if conducting demolition, regardless of the date of construction of the building. Additionally, asbestos abatement contractors are required to submit notification to the Michigan Department of Licensing and Regulatory Affairs (DLARA) and DEQ-AQD if the quantity of friable ACM being removed meets the following criteria:

**DEQ-AQD (NESHAP) [*260 linear feet, 160 square feet, 35 cubic feet or more is threshold*]**

- Planned Renovation – 10 **working** days notice
- Emergency Renovation
- Scheduled Demolition – 10 **working** days notice
- Intentional Burn – 10 **working** days notice
- Ordered Demolition
- Non-asbestos Demolition – 10 **working** days notice

**DLARA (MIOSHA) [*>10 linear feet or 15 square feet is threshold*]**

- Demolition, Renovation, or Encapsulation - 10 **calendar** days notice
- Emergency Renovation/Encapsulation

The contractor submitting a notification form to DEQ-AQD or DLARA must send a copy to the Asbestos Program Manager. Notifications can be physically mailed, e-mailed, or faxed to:

150 Giltner Hall East Lansing, MI 48824-1101	<a href="mailto:hansmann@msu.edu">hansmann@msu.edu</a>	(517) 432-6686
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In situations where a variance of work methods must be requested of either agency, prior approval must be provided to the asbestos abatement contractor in writing from the Asbestos Program Manager.

Notification to the Asbestos Program Manager (APM)

Notification shall be made to the APM of the following occurrences:

1. Project meetings with asbestos contractors and environmental consultants.
2. Pre-bid, pre-construction, kickoff, and project progress meetings for projects with asbestos abatement components.
3. Notifications to State agencies as detailed above. Copies of subsequent revisions to a notification must also be submitted to the APM.
4. Asbestos abatement activity information to include location, material to be abated, dates and times of work, abatement contractor, environmental consultant, and university project manager/coordinator.
5. Inspections from state or federal agencies regulating asbestos such as MIOSHA, DEQ-AQD, OSHA, and EPA.

**Project Design**

Certain asbestos abatement activities warrant development of a comprehensive project design. These documents define the expectations of the university, the requirements of the work, and the scope of the project, and can ultimately be used as part of the bid process. Many projects are simple enough that no project design is required and a “scope of work” letter may be all that is needed. The determination to prepare a formal specification or scope of work will be made on a case by case basis by the EAS Project Design Representative, the PIA for Asbestos, and the Asbestos Program Manager. If formal specification documents are produced for a project they must be prepared by a Project Designer accredited by the Michigan Department of Licensing and Regulatory Affairs (DLARA).

At MSU, projects typically fall into one of four categories:

- **Major:** Projects that cost \$1 million or more. Major projects must be presented to the MSU Board of Trustees for approval in a three-step process.
- **Minor:** Projects that cost from \$250,000 to \$1 million.
- **Purchase Orders:** Projects that cost up to \$250,000.
- **Project Requests:** Projects that are constructed using Physical Plant Building Services trades professionals.

*Major* and *Minor* projects are first directed to the Asbestos Program Manager while *Purchase Order* and *Project Request* projects are first directed to the Physical Plant PIA for Asbestos. It is the responsibility of the assigned EAS Project Design Representative to make the appropriate contact.

**Responsibility:**

<b>MAJOR and MINOR PROJECT STEPS</b>	<b>EAS</b>	<b>APM</b>
Contact appropriate staff member (PIA for Asbestos or APM)	X	
Provide scope of the proposed project	X	
Review existing records and Conduct initial site walk-through (if necessary)		X
Write RFP language for consultant services OR refer project to Physical Plant PIA		X
Advertise RFP through purchasing to retain consultant services	X	
Review and Select Consultant	X	X
Schedule Type II Asbestos Inspection		X
Review inspection results and specification developed by consultant	X	X
Conduct mandatory pre-bid walkthrough	X	X
Authorize and pay consultant invoices	X	

PURCHASE ORDER and PROJECT REQUEST PROJECT STEPS	Responsibility:	
	EAS	PIA
Contact appropriate staff member (PIA for Asbestos or APM)	X	
Provide scope of the proposed project	X	
Review existing records and Conduct initial site walk-through (if necessary)		X
Schedule Project, Write release for consultant services, OR refer project to APM		X
Schedule Type II Asbestos Inspection (if necessary)		X
Review inspection results and specification developed by consultant	X	X
Authorize PIA work order charges	X	

Where specifications are required they shall be in National Institute for Building Sciences (NIBS) format for inclusion in complete project specification under Construction Specifications Institute (CSI) 2004 standard section 028200. General Terms and Conditions (front-end documents) need not be provided by consultant.

### Asbestos Abatement Contractor Prequalification

Contractors wishing to conduct asbestos abatement activities on any Michigan State University (MSU) project must first be prequalified by the Department of Environmental Health and Safety (EHS). Contractors selected for prequalification will be approved for one (1) calendar year and will need to reapply every fall. Successful prequalification does not specifically guarantee work with MSU.

#### Anticipated Annual Prequalification Schedule

Application Release	September 15 <sup>th</sup>
Last Postmark Date Accepted	November 1 <sup>st</sup>
Contractor Prequalification Notification	December 15 <sup>th</sup>
Prequalification Period	January 1 <sup>st</sup> – December 31 <sup>st</sup> of the following year

MSU reserves the right to waive prequalification requirements for abatement contractors on a case by case basis. A waiver of prequalification must be in writing from MSU EHS and will be specific to a single project. MSU also reserves the right to remove contractors from the prequalified list for noncompliance with the applicable asbestos regulations, a project-specific asbestos specification, and/or this asbestos management plan.

Updated prequalification information such as currently approved contractors and the most recent version of the application will be listed at [www.aware.msu.edu/asbestos/prequalification.htm](http://www.aware.msu.edu/asbestos/prequalification.htm).

### Emergency Response Procedures

A fiber release episode is any uncontrolled or unintentional disturbance of asbestos-containing building materials resulting in visible emission or debris. 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.

Minor fiber release episodes are defined as the falling or dislodging of three square or linear feet or less of friable asbestos while major fiber release episodes are defined as the falling or dislodging of greater than three square or linear feet or more of friable asbestos. In the event of *any* asbestos fiber release episode the following procedures should be *immediately* followed:

1. Do not attempt to clean.
2. Exit the area and restrict access by others by posting appropriate warning signs.
3. Notify your supervisor. If your supervisor is not available contact the Physical Plant Dispatch at (517) 353-1760 or MSU EHS at (517) 355-0153.

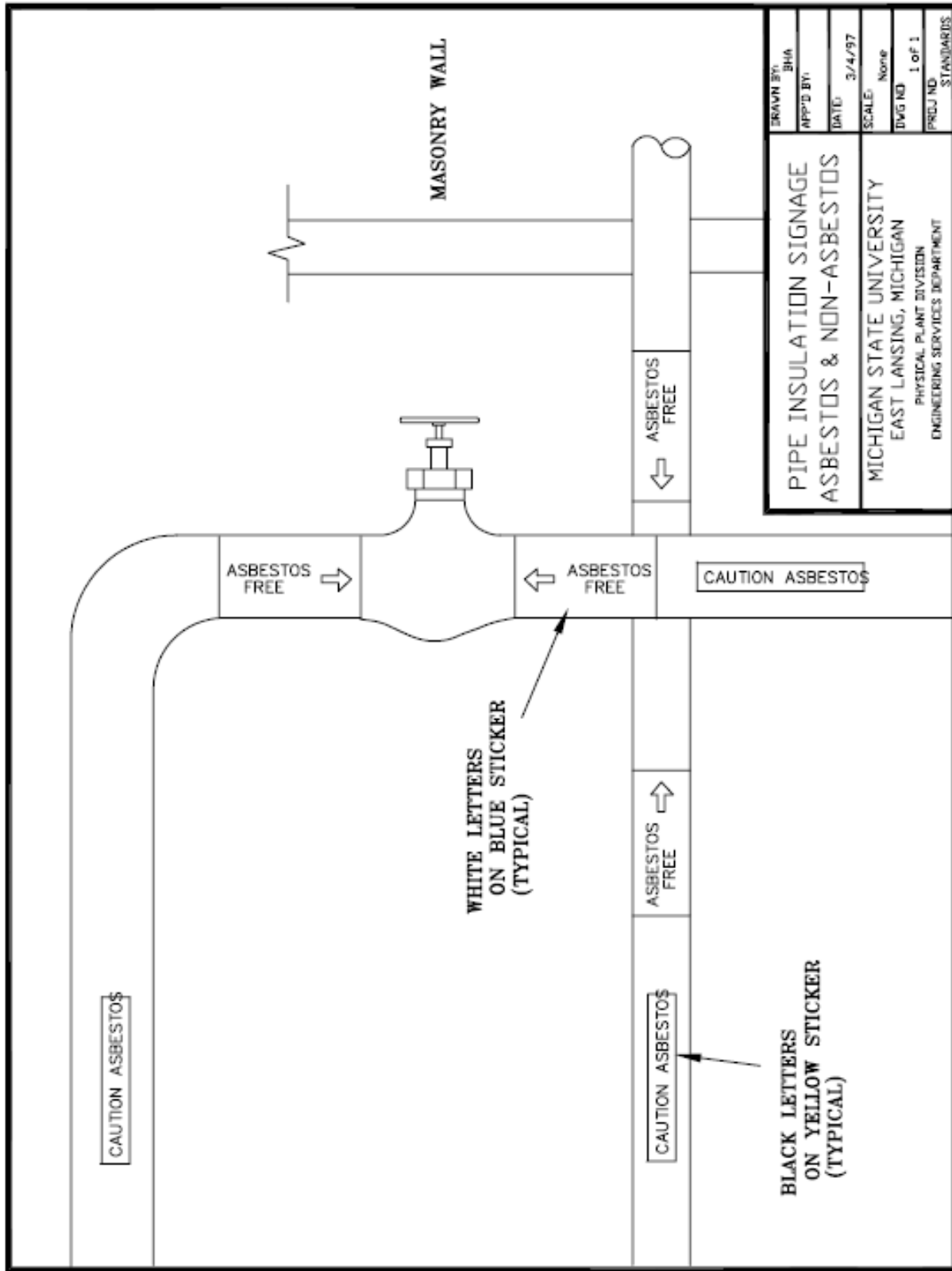
4. Shut down the HVAC system serving the area.
5. EHS and/or the Physical Plant PIA for Asbestos will design a response action consistent with 40 CFR 763.91 and engage the open order asbestos abatement contractor(s) and environmental consultant(s) as necessary.

### **Best Management Practices**

The Department of Environmental Health and Safety as well as the Physical Plant maintain the “Best Management Practices” guidelines for operations. Current Best Management Practices at MSU include:

1. Abate ACM impacted during the course of renovation or any other work activities.
2. If a building or portion of a building will be demolished, all ACM must be abated, including NESHAP Category I and Category II materials.
3. Do not cover any ACM including vinyl floor tile, mastic, rolled vinyl flooring products, pipe insulation, or any other material that has the potential to deteriorate while covered. Leaving these materials results in much higher costs and presents complications for future projects.
4. 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.
5. Do not use asbestos containing lab gloves, wire mesh screens, test-tube holders or other similar laboratory equipment. Contact the APM for disposal options.
6. No material containing asbestos shall be installed on MSU owned property at any time for any reason.
7. Non-Asbestos replacement materials shall be colored blue, embedded with gold color coding (or similar feature), or shall be permanently signed in a manner that future contractors and MSU staff can easily recognize the replacement product as non-asbestos and can easily determine the limits of the replacement product. See *Appendix A* for signage details.

Appendix A: Pipe Insulation Signage – Asbestos and Non-Asbestos Materials



Pinstrup