

**ILLINOIS INSTITUTE OF TECHNOLOGY
SAFETY COMMITTEE**

**ASBESTOS OPERATIONS & MAINTENANCE
PROGRAM**

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1.0 INTRODUCTION

Asbestos-containing materials (ACM) are present within the various facilities owned or leased by Illinois Institute of Technology (IIT). As part of IIT's continuing commitment to safety, health, and the environment, this Asbestos Operations and Maintenance Program ("Program") has been developed. The contents of this Program apply to all ACM within IIT's facilities and cover all occupants of these facilities including employees, contractors, students, faculty and visitors

The Program is designed to provide the tools necessary to manage ACM within facilities, while protecting the health and safety of facility personnel and occupants and complying with applicable governmental regulations. Key aspects of the management plan include:

- 1.1** Information regarding the presence, location and quantity of ACM within facilities;
- 1.2** Means used to communicate the presence, location and quantity of ACM within a facility and health and safety information to employees and facility-related personnel;
- 1.3** Responsibilities for compliance with this Program;
- 1.4** Work practices and procedures, including the Work Order Permit Review System (Section 7.0) and the Standard Work Practices and Procedures (Section 8.0), that allow for renovation, construction or emergency maintenance to be performed safely without exposing employees, building occupants or the public to airborne asbestos fibers;
- 1.5** IIT's policy for the treatment of installed ACM within the various facilities;
- 1.6** Training requirements for those who may have contact with or may disturb ACM; and
- 1.7** Recordkeeping requirements and the chain of command for recordkeeping and reporting.

This Program is designed to comply with applicable federal, state and local asbestos laws and regulations. In developing this Program, IIT aims to provide employees, contractors, facility-related personnel and others with information necessary to minimize the risk of potential asbestos exposure. In addition, the established organizational structure should ensure the oversight of asbestos issues, including operations and maintenance concerns and renovation and demolition activities.

2.0 PURPOSE

The principal objective of the Program is to provide an organizational structure and means of communication to manage ACM in a manner that protects the health and safety of individuals working within a facility. In addition, the Program's established administrative framework of should provide for the ability to prevent any disturbance of identified ACM, except under controlled, regulated conditions and by duly authorized individuals.

This objective will also be met by communicating information regarding the presence, location and quantity of ACM to employees and contractors working in or adjacent to areas having known, presumed and/or suspect ACM. IIT supervisors and contractors must

ensure that their employees understand the requirements of this Program. Other means of accomplishing the Program's objective to safely manage asbestos include:

- 2.1 Designation of an Asbestos Program Coordinator, namely IIT's Director of Environmental Health and Safety, and development of the organizational structure necessary for administering compliance with asbestos related communication, recordkeeping, procurement activities and work activities. The Asbestos Program Coordinator, or designee, will ensure that outside contractors and IIT employees are aware of, comprehend and abide by the Program's requirements.
- 2.2 Determination of the presence, location and quantity of ACM within the various facilities. This information is detailed in Asbestos Survey Reports which IIT maintains. These reports can be obtained by contacting the Asbestos Program Coordinator. An example of the information contained in these reports is provided in Appendix A of this document.
- 2.3 Methods of communication to notify employees and contractors of the presence, location and quantity of ACM found within a facility. These methods include posting signs, labels or other means to communicate the location of ACM.
- 2.4 Use of trained personnel for any activity where the contact or disturbance of ACM may occur. All asbestos related work activities will be performed by trained personnel in accordance with applicable federal, state and local laws and regulations.
- 2.5 Development of a reasonable recordkeeping and notification system to ensure that activities which may disturb asbestos are only performed under proper review and approval of the Asbestos Program Coordinator or designee.

3.0 BACKGROUND ASBESTOS INFORMATION

3.1 WHAT IS ASBESTOS?

Asbestos is the common name given to a group of naturally occurring minerals which can be broken or divided into fine fibers. These fibers have been found to have a number of physical characteristics which made it a popular product additive for hundreds of years, including high tensile strength, heat resistance, chemical resistance and non-conductance of electricity. The six types of asbestiform minerals are: chrysotile, amosite, crocidolite, actinolite, anthophyllite, and tremolite. The two most common forms, chrysotile and amosite, account for over 95% of the installed asbestos found today.

3.2 USES OF ASBESTOS

Asbestos fibers were used in a wide variety of products, including, but not limited to:

- Pipe insulation
- Spray-on fire proofing
- Fire protective curtains and gloves
- Transite sidings & shingles
- Floor tile
- Adhesives

- Gaskets

- Thermal system insulation (“TSI”)

33 IDENTIFYING ASBESTOS HAZARDS

The mere presence of asbestos does not mean a hazard exists. The conditions which pose a threat or danger of airborne asbestos are the disturbance or damage of ACM. During these conditions, fibers may be released and become airborne. The hazard occurs when a person inhales these airborne fibers.

Friable ACM are considered to be a greater hazard than non-friable materials. Friability is the ability of a material to be crushed, pulverized or reduced to powder by hand pressure. Non-friable materials include floor tiles, transite sidings and adhesives. As long as these materials remain in good condition and are not being disturbed, they pose little hazard. Friable materials include thermal system insulation and spray-on fireproofing. Such materials should be kept in good condition and require a higher level of care when working around them.

34 HEALTH EFFECTS OF ASBESTOS

Asbestos may cause a number of adverse health effects. Although the majority of people who have developed a disease as a result of asbestos exposure were exposed to high concentrations of fibers for extended periods of time, the potential for disease at low exposure levels exists. The most common asbestos related diseases are as follows.

- 341 Asbestosis: A disease characterized by fibrotic scarring of the lungs. Asbestosis is prevalent among asbestos workers who have been exposed to large quantities of asbestos fibers over a long period of time. In other words, a clear dose-response relationship exists between exposure and disease development: the greater the exposure, the more likely asbestosis will develop. The latency period for asbestosis is 15- 30 years.
- 342 Lung Cancer: Asbestos is a cause of lung cancer. Persons exposed to asbestos in an industrial setting have 5-times greater risk of getting lung cancer. This risk from smoking cigarettes is 10-times greater. When these two factors are combined, the risk of lung cancer becomes 50- times greater. A dose-response relationship between exposure and lung cancer appears to exist. The latency period for lung cancer is 20-30 years.
- 343 Mesothelioma: This is a cancer of the chest cavity lining (mesothelium) and/or the lining of the abdominal cavity. This cancer spreads quickly and is usually fatal. Cigarette smoking does not increase the risk of mesothelioma, and no dose-response relationship exists between the amount of exposure and mesothelioma. Like other asbestos diseases, mesothelioma has a long latency period, 30-40 years after initial exposure.

35 MANAGING ASBESTOS

As stated, the mere presence of asbestos does not mean that a hazard exists. In fact, in most cases, asbestos can be effectively managed in place with little risk by keeping ACM in good condition and removing damaged ACM. To this end, IIT maintains an on-going effort to manage ACM within its facilities. Work requiring the removal or disturbance of ACM is restricted to trained, certified individuals using stringent engineering controls and work practices.

In addition, individuals should adhere to the following measures in order to protect themselves and others from exposure to airborne asbestos:

- 3.5.1 Presume all building materials contain asbestos unless proven otherwise by a certified inspector.
- 3.5.2 Do not remove, cut, drill, sand, grind or otherwise disturb any material that may contain asbestos.
- 3.5.3 Do not go above ceilings, behind walls or into building spaces such as attics and crawlspaces unless these areas have been inspected and cleared under this procedure.
- 3.5.4 Do not pull cable or wiring through ceiling spaces with asbestos.
- 3.5.5 Do not install screws, pins, nails or hangers into asbestos ceiling or wall plasters.
- 3.5.6 Be careful not to damage walls, ceiling or floors when moving furniture or equipment.
- 3.5.7 Immediately report any observed damage or deterioration of suspect building materials to your supervisor or building manager.
- 3.5.8 Potential ACM should not be disturbed. Materials which may contain asbestos should either be tested for asbestos content, or abated by properly trained personnel.

4.0 PROGRAM ELEMENTS (METHODS OF COMPLIANCE)

4.1 Communication of Hazards (General)

The Asbestos Program Coordinator, or designee, will notify employees and contractors working within the facility of the presence, location and quantity of ACM. Notification will be accomplished as follows:

- 4.1.1 All maintenance, custodial staff and other personnel who may contact or disturb ACM as part of their work duties will be notified of the presence, locations and quantities of asbestos within their facility during new employee training.
- 4.1.2 Contractors working within IIT's facilities will be notified of the potential presence of ACM during the contract procurement process. A written letter will be given to all new vendors to notify them of the potential presence of ACM within a facility. Contractors will be made aware of and should abide by the contents of this Program.

- 4.1.3 Before performing work activities which may contact or disturb asbestos, employees and contractors will be provided with information on the presence, location and quantity of ACM within the work area.
- 4.1.4 Known and presumed ACM will be labeled whenever feasible to notify personnel of ACM before disturbance may occur. All materials not known to be non-ACM should be assumed to contain asbestos unless otherwise determined by the Asbestos Program Coordinator.
- 4.1.5 Employees and contractors will be required to notify the Asbestos Program Coordinator whenever disturbance of ACM (or potential ACM) has occurred or might occur.
- 4.1.6 IIT employees and contractors working within a facility will treat all thermal system insulation, surfacing material and floor tile installed prior to 1981 as if it contains asbestos, unless documentation exists which disprove this presumption.
- 4.1.7 Contractors performing asbestos related work should inform the building owner and employers in the work area of the location and quantity of ACM in the area and the precautions to be taken to protect them from asbestos exposure.

4.2 Training

The Asbestos Program Coordinator, or designee, will develop a training program consistent with the following guidelines:

- 4.2.1 All maintenance and custodial staff who perform duties in facilities where ACM is or may be present will annually receive at least 2 hours of asbestos awareness;
- 4.2.2 All contractors who may conduct activities that may result in the contact or disturbance of ACM will ensure that their employees have received the requisite training as required by the OSHA Asbestos in Construction Standard;
- 4.2.3 All contractors who may conduct abatement of existing ACM or otherwise assist during response actions will meet the training and licensing requirements promulgated by the EPA, OSHA and Illinois Department of Public Health (IDPH); and
- 4.2.4 Providing notification to others, working in areas where asbestos may be, but who are unlikely to contact or disturb existing materials, of its presence.

4.3 Labeling and Signage

It is the intent of this Program to augment ACM hazard communication through the use of warning labels and signs. Regardless of the presence or absence of signs or labels, employees and contractors should assume that building materials contain asbestos, unless these materials are marked as "Asbestos Free". The purposes of signs and labels are to:

- 4.3.1 Allow for visual identification of ACM locations so as to prevent inadvertent disturbances; and

- 4.3.2 Warn of and prevent entry into regulated areas where exposures may be above the OSHA permissible exposure limit (PEL); such regulated areas may be present only during abatement projects or inadvertent fiber release episodes.

As part of this Program, IIT will make a reasonable effort to label identified friable ACM that is readily accessible. Labeling may be present at locations where a reasonable possibility exists that insulation may be disturbed. Category I non-friable materials such as roofing material and vinyl asbestos tile do not require labels under this Program. Category II non-friable ACM such as transite board should be labeled to the extent feasible at accessible locations.

All asbestos abatement projects will be closed off and made inaccessible to unauthorized personnel through the displaying of asbestos warning signs meeting OSHA requirements. In the rare circumstance that ACM has been accidentally damaged resulting in a fiber release episode, the immediate area will be closed off and made inaccessible to unauthorized personnel through the displaying of asbestos warning signs until the area is cleared for re-occupancy.

4.4 Occupant Awareness and Notification

Notification of the presence and location of ACM and the existence of Program contacts will be given to each employee whose work could require the conduct of activities in a space where ACM may be present. The employee groups which will receive this notification include:

- Maintenance
- Custodial/housekeeping
- Architects and project managers
- Operations
- Capital Budgeting
- Others as appropriate and needed

All contractors performing work within a facility will receive notification of the presence and location of ACM and Program contacts prior to the commencement of work, so as to allow sufficient time to revise work plans, if necessary. The form of the notification is attached as Appendix B hereto. Prior to the start of an asbestos abatement project, additional information will be provided to building occupants that explains the work to be performed and the measures being employed to protect them. This information will be made available either at group meetings, by letter, through the use of media resources or a combination thereof. Maintenance personnel and custodial supervisors will be provided with a complete record of the location of all suspect and known ACM in the buildings for which they are responsible. The Asbestos Program Coordinator will maintain accurate records of the employees and contractors who have been notified.

The designated building manager will be provided with a building asbestos profile for each building. The profile will:

- 4.4.1 Include information regarding product type, specific location, estimate quantity and percentage of asbestos content and physical condition;
- 4.4.2 Be kept in the possession of each building's designated building manager at a location in the building that is readily accessible to building employees and their designated representatives; and
- 4.4.3 Be updated as surveillance, test results and/or response actions are undertaken in the building.

4.5 Identification of ACM

IIT has made significant efforts to identify the presence, location and quantity of ACM within its facilities. The identification of such materials has been accomplished through facility asbestos surveys and the testing and analysis of suspect materials that may be impacted by facility renovation projects. In accordance with this Program, however, materials which have not yet been tested for asbestos content should be presumed to contain asbestos, unless this presumption has been refuted by the Asbestos Program Coordinator. The Work Order and Permit Review System presented in Section 7.0 will provide the Asbestos Program Coordinator sufficient time to conduct the requisite testing in order to ascertain the full scope of ACM within a given work area prior to conducting activities which may result in the disturbance of any ACM.

4.6 Recordkeeping

The Asbestos Program Coordinator will maintain records of information concerning the presence, location and quantity of ACM and presumed ASM installed within a facility as well as certain additional records, including:

- 4.6.1 This Program and all updated versions;
- 4.6.2 Records of all activity requiring the disturbance of ACM within facilities;
- 4.6.3 Records of all asbestos-related training provided to employees;
- 4.6.4 Medical records and fitness test records of persons required to wear a respirator;
- 4.6.5 Records of periodic surveillance activities and other asbestos management efforts;
- 4.6.6 Records of any air monitoring data performed during asbestos related activities;
- 4.6.7 Work permits and documentation of abatement activities;
- 4.6.8 Records of storage and disposal locations of ACM; and
- 4.6.9 Records of all notifications to employees, employers, faculty and other regarding the presence of ACM within their facility or of upcoming renovation activities where ACM may be disturbed.

All facility asbestos management records, including this Program, must be kept for a minimum of six years or for such longer period as required by law. The Asbestos Program Coordinator will be responsible for seeing that these records are maintained.

4.7 Abatement / O&M

If a renovation or maintenance project may impact ACM, then the ACM should generally be removed prior to project commencement. Following such projects, only non-asbestos materials will be installed in place of the original ACM. All asbestos related work will be performed by personnel who are accredited and licensed, as necessary, by local, state and federal regulatory agencies. IIT in-house personnel should not perform any maintenance or renovation related tasks that may result in the disturbance of ACM. The Asbestos Program Coordinator, or designee, will ensure that all damaged friable ACM is repaired so that any hazard associated with this ACM is minimized to the extent feasible.

4.8 Periodic Surveillance

Periodic surveillance of ACM will be conducted by the Asbestos Program Coordinator and/or designee at least every six months to ensure that these materials are maintained in a state that poses no hazard. The purpose of the periodic surveillance is to monitor for damaged or deteriorated ACM and to repair or remove such material as necessary. In addition to this periodic surveillance, Department Managers, Supervisors and those employees who have potential contact with ACM are to be trained to observe damaged or deteriorated ACM and report it to their Supervisor or the Asbestos Program Coordinator.

4.9 Controls & Permitting

A work permit system has been designed to ensure that no work is done in a facility that will impact ACM without following regulatory requirements for performing such activities. The form of the permit defines if ACM is present in the proposed work area and, if so, whether the work can proceed with stipulations of caution or the ACM should be abated prior to the work. The Asbestos Program Coordinator or designee will approve these permits. A copy of this permit has been provided in Appendix C of this program.

All affected employees and all contractors will be instructed, as part of their notification, to assume that all suspect materials contain asbestos, unless a contrary indication is made by a trained individual, regardless of the fact that an asbestos label may not be present or the material may not be addressed within the asbestos survey report. Any project that will require disturbance of ACM must be performed by accredited, licensed personnel in conformance with applicable laws and regulations.

This Program seeks to prevent any ACM which is being managed in-place from being disturbed. All practices, including those related to cleaning, maintenance and renovation, which have the potential to disturb ACM, are to be conducted in accordance with this Program. Disturbance of ACM should only occur under controlled conditions by certified, licensed asbestos abatement workers following applicable laws and regulations.

4.10 Air Monitoring

No employee or building occupant should be exposed to an airborne concentration of asbestos in excess of 0.1 fibers per cubic centimeter of air at an eight hour time- weighted average or 1.0 fiber per cubic centimeter for any 30 minute period. Employees will be made aware of results whenever air monitoring is performed. Air monitoring will be conducted as follows:

- 4.10.1 Qualified personnel should monitor all work sites where exposures are expected to exceed the PEL;
- 4.10.2 Qualified personnel should conduct an exposure assessment immediately before or at the initiation of each asbestos operation to ascertain expected exposures during the work;
- 4.10.3 Employers performing Class I work will accurately determine the airborne concentrations of asbestos to which employees may be exposed through use of perimeter and clearance air monitoring; and
- 4.10.4 All abatement contractors will conduct their own personal air sampling for all employees who may be exposed to asbestos in accordance with 29 CFR 1926.1101.

For purposes of this Section 4.10, “qualified personnel” means an unbiased independent agent of the client, retained independently of the abatement contractor, experiences in air monitoring.

4.11 Respiratory Protection

IIT employees will be provided respiratory protection whenever performing the following: (i) O&M activities where TSI or surfacing material is being disturbed, (ii) activities where a negative exposure assessment has not been performed, (iii) whenever the fiber concentrations exceed the PEL, or (iv) when working in a regulated area where respiratory protection is required. Respirators will be provided in accordance with IIT’s respiratory protection policy and applicable OSHA standards.

4.12 Regulated Areas

All Class I, II and III asbestos work will be conducted within a regulated area. In addition, any other work where a reasonable possibility exists that the PEL may be exceeded will be conducted in a regulated area. Stringent engineering and work practice controls will be utilized to ensure that individuals working outside of the regulated area are not exposed to airborne fiber concentrations at or above the EPA “clean air” guideline of 0.01 fibers per cubic centimeter.

4.13 Medical Surveillance

A medical surveillance program will be instituted for all employees who for 30 or more days per year are engaged in Class I, II and III work, have exposure at or above the PEL or are required to wear a negative pressure respirator.

4.14 Waste Storage/Disposal

Asbestos-containing waste resulting from asbestos activities will be stored in a secured location in accordance with EPA and OSHA regulations. Waste will be disposed of at an EPA-approved landfill, and waste manifests will be used and maintained as part of this Program.

4.15 Competent Person

Activities resulting in the disturbance of ACM will be supervised by a competent person. The competent person will be responsible for conducting exposure assessments prior to ACM disturbance and ensuring employees are not exposed to asbestos created during work procedures.

4.16 Regulatory Notification

The EPA must be notified 10 working days prior to the commencement of work activities where supporting structure demolition is to take place or when an amount of regulated ACM greater than 160 square feet, 260 lineal feet or 15 cubic feet is to be removed. IDPH must be notified at least two working days prior to the performance of work activities requiring the removal or disturbance greater than 3 linear or square feet but less than 160 square feet or 260 lineal feet.

5.0 RESPONSIBILITIES

The Asbestos Program Coordinator will be responsible for the implementation of this Program. However, the effectiveness of the Program can only be achieved through the cooperation and communication of all involved parties. The following list summarizes the job functions and responsibilities associated with a program of this type. It illustrates that success requires the participation of many in the organization.

5.1 Asbestos Program Coordinator (Director of Environmental Health and Safety)

- 5.1.1 Ensure the effective implementation of this Program and its work permit system;
- 5.1.2 Ensure overall compliance with federal, state and local asbestos laws;
- 5.1.3 Maintain records of removal and small scale disturbances of ACM;
- 5.1.4 Review Work Order Permit Forms and authorize or deny requested work;
- 5.1.5 Maintain records of training, respiratory protection, worker notification, air monitoring, permits, periodic surveillance and waste disposal;
- 5.1.6 Conduct asbestos surveys as required by OSHA regulation 29 CHR 1926.1101 and conduct testing of all suspect ACM prior to the disturbance of these materials;
- 5.1.7 Conduct periodic surveillance of ACM every six months;
- 5.1.8 Ensure that training is provided to employees per the Program; and

5.1.9 Ensure that monitoring and exposure assessment are performed.

5.2 Maintenance Management Personnel

- 5.2.1 Report observed damage or deterioration to ACM to the Asbestos Program Coordinator;
- 5.2.2 Ensure employees and contractors are notified of the presence, location and quantity of ACM;
- 5.2.3 Notify the Asbestos Program Coordinator prior to the initiation of any construction or renovation projects where the potential disturbance of ACM exists;
- 5.2.4 Organize asbestos abatement projects necessary for capital projects and O&M;
- 5.2.5 Notify contractors of the presence, location and quantity of ACM within their work areas prior to the initiation of all construction projects;
- 5.2.6 Ensure that the presence of ACM has been determined and reviewed prior to the issuance of any work order;
- 5.2.7 Require employees to participate in training as required by the program; and
- 5.2.8 Provide notification via the Facilities Announcement section of the IIT webpage regarding upcoming asbestos-abatement projects to be performed within IIT's facilities.

5.3 Rental Property Management Personnel

- 5.3.1 Require employees to participate in training as mandated by the Program;
- 5.3.2 Provide notification to facility tenants regarding the presence, location and quantity of ACM within leased space; and
- 5.3.3 Notify the Asbestos Program Coordinator of any facility related issues where the potential disturbance of ACM exists.

5.4 Design & Construction Personnel

- 5.4.1 Require certification from all Architects that only non-ACM have been specified within construction documents and that installation of ACM is strictly prohibited;
- 5.4.2 During the design phase of each project, provide consideration for the potential impact that construction related projects may have on ACM;
- 5.4.3 Notify the Asbestos Program Coordinator of capital projects to be performed;
- 5.4.4 Fill out the Work Order Permit Form (or equivalent) prior to asbestos disturbance through HawkWorks;
- 5.4.5 Submit Asbestos Work Permit Form to Asbestos Program Coordinator; and
- 5.4.6 Notify contractors of ACM prior to start or continuance of a project.

5.5 Abatement Contractors

- 5.5.1 Notify employees and contractors of the requirements for a regulated area and the control methods to be used to protect the health and safety of persons in adjacent areas;
- 5.5.2 Perform exposure assessment prior to initiating work;
- 5.5.3 Perform abatement procedures in conformance with all applicable laws;
- 5.5.4 Document abatement procedures on the Asbestos Response Activity Form (or equivalent);
- 5.5.5 Submit daily asbestos project documentation;
- 5.5.6 Document remaining locations of ACM and submit to the Asbestos Program Coordinator; and
- 5.5.7 Submit project submittals to project coordinator.

5.6 Contractors

- 5.6.1 Responsible for conveying information of newly discovered ACM or potential ACM to the owner and any contractors within a facility;
- 5.6.2 Ensure that the methods used during asbestos activities are adequate to protect health and safety of employees; and
- 5.6.3 Understand the requirements of this Program.

5.7 IIT Employees

- 5.7.1 All employees who may contact or disturb ACM as part of their work activities must attend all training sessions applicable to their work.
- 5.7.2 All applicable employees must assist their manager in complying with this Program, and if they have questions or concerns, they should contact the Asbestos Program Coordinator.
- 5.7.3 Employees should advise their supervisor if they observe any damaged or deteriorated ACM.

6.0 ASBESTOS CONTACT LIST

- 6.1** For any asbestos issues within a facility please contact the following person:

Asbestos Program Coordinator

Name: Cindy Chaffee

Title: Director of Environmental Health & Safety

Phone Number: 312-567-3084

- 6.2** If the Asbestos Program Coordinator is unable to be reached, please contact:

Name: Kevin Gallagher

Title: Associate Vice President for Facilities

Phone Number: 312-567-8992

Facilities Main Desk: 312-567-3320

Facilities Work Order Requests: <https://facilities.iit.edu/>

To process a work order, please contact the facilities department through your MyIIT Portal to submit a request on HawkWorks.

- 63** If testing or consulting services are needed, the Asbestos Program Coordinator will secure such services from the following company:

Company Name: Pepper Environmental Technologies
Contact: James Davis
Phone Number: 847-304-1326

7.0 WORK ORDER PERMIT REVIEW SYSTEM

7.1 Purpose

The purpose of the Work Order Review System is to give the Department of Environmental Health & Safety an opportunity to review all proposed renovation, maintenance or repair work that is to be completed internally by staff and/or outside contractors to ensure that:

- 7.1.1 ACM will not be disturbed by the work;
- 7.1.2 Damaged ACM present in a work area will be repaired and the area cleaned before the initiation of construction activities;
- 7.1.3 Suitable precautions are taken for work where the potential to unintentionally disturb ACM exists (e.g. due to the physical configuration of the area and the location of the ACM in relation to the proposed work); and
- 7.1.4 ACM that will be disturbed by the work is removed using certified, licensed personnel under appropriate supervision.

A Work Order Review Permit must be completed for each project where the disturbance or potential disturbance of ACM may occur. All suspect and known ACM in the area of the work will be identified on the review form. When the work involves, or will be conducted in the vicinity of TSI, then all ACM TSI in the immediately vicinity of the work area will be clearly identified with the OSHA Danger warning label and non-ACM TSI with an “Asbestos Free” label as appropriate.

7.2 Participants

All departments that conduct work that has the potential to disturb ACM or that work in a building area that is potentially contaminated with ACM debris will utilize the Work Order Review Permit System. Capital projects and maintenance projects will abide by the regulatory requirements detailed in this document.

As applicable, the Asbestos Program Coordinator, or designee, will contract for the services of a licensed asbestos consulting and inspection firm to secure samples of all suspected ACM that will be damaged, disturbed, removed or otherwise impacted by the proposed work. The consultant will be responsible for developing a comprehensive asbestos inspection report for each site or project and developing asbestos removal, encapsulation and/or repair specifications.

7.3 Instructions for Completing the Work Order Review Form

Each responsible party should complete all of the sections of the Review Form for which he or she is responsible, which is attached as Appendix C.

- 7.3.1 Detail the building area(s) and room(s) that will be involved in the work;

- 7.3.2 Describe the work that to be performed and/or attach a copy of a work order;
- 7.3.3 Provide a sketch of the work area to clarify scope, showing both the material to be removed and any undisturbed ACM remaining at the completion of work;
- 7.3.4 Provide estimated start and completion dates for the field work;
- 7.3.5 Provide the name and signature of the asbestos supervisor who has approved and will oversee the work;
- 7.3.6 List the contractors or employee performing the work;
- 7.3.7 Attach copies of the analysis of bulk sampling of suspected ACM;
- 7.3.8 Describe the work practices to be used;
- 7.3.9 Estimated the volume of waste to be generated and its disposition; and
- 7.3.10 State whether air monitoring will be required and who will be performing it.

A copy of this Form must be filed with the Asbestos Program Coordinator prior to the commencement of work.

7.4 Recordkeeping

The completed Work Order Review Form and all related information will be incorporated into the O&M building records. At the completion of each project where the disturbance of ACM has occurred, a completed Action Response Summary Report will be completed and maintained within the O&M building records.

8.0 STANDARD WORK PRACTICES

Standard work practices and procedures provide specific guidelines for certain asbestos-related work activities, and adherence to these will minimize the production of airborne asbestos fibers. As an initial matter, IIT personnel should not perform work activities that require the disturbance or removal of ACM. All response actions must be conducted by appropriately trained, licensed personnel in accordance with applicable laws and regulations.

8.1 Emergency Response

The Asbestos Program Coordinator, or designee, will promptly investigate all reported asbestos disturbances and will act to protect the safety and health of the IIT community. Incidents will be fully documented and the abatement procedures and activities employed appropriately recorded. All asbestos projects will be completed in accordance with applicable federal, state and local laws.

8.1.1 Dislodging of less than three square or three linear feet of friable ACM:

- 8.1.1.1 Notify the Asbestos Program Coordinator of the location and nature of disturbance.
- 8.1.1.2 The Asbestos Program Coordinator will ensure that the area is regulated so as to minimize the potential exposure to occupants.

- 8.1.1.3 The Asbestos Program Coordinator will then notify appropriately trained and licensed personnel.
- 8.1.1.4 Cleanup will be conducted as follows:
 - 8.1.1.4.1 Access to the area will be immediately and properly restricted;
 - 8.1.1.4.2 Workers will don respiratory protection;
 - 8.1.1.4.3 All debris will be saturated with amended water;
 - 8.1.1.4.4 All debris will be placed in six-mil Polyethylene asbestos disposal bags;
 - 8.1.1.4.5 All areas beneath the point of release will be HEPA vacuumed and wet wiped;
 - 8.1.1.4.6 The damaged ACM will be repaired;
 - 8.1.1.4.7 At the completion of clean-up activities, final clearance air monitoring will be conducted in the area to determine if airborne fiber concentrations are within acceptable limits; and
 - 8.1.1.4.8 Once the air quality has been determined to be acceptable, the remaining barriers will be removed and the work area will be authorized for reentry.

8.1.2 Dislodging of more than three square or three linear feet of friable ACM:

- 8.1.2.1 Notify the Asbestos Program Coordinator of the location and nature of the disturbance.
- 8.1.2.2 The Asbestos Program Coordinator will ensure that the procedures listed below will be followed:
 - 8.1.2.2.1 Access to the area will be immediately and properly restricted;
 - 8.1.2.2.2 The air handling system will be shut down or modified to restrict air movement through the affected area;
 - 8.1.2.2.3 The Asbestos Program Coordinator will coordinate the appropriate response action with appropriately trained and licensed personnel;
 - 8.1.2.2.4 At the completion of abatement activities, final clearance air monitoring will be conducted in the area to determine if airborne fiber concentrations are within acceptable limits; and
 - 8.1.2.2.5 Once the air quality has been determined to be acceptable, the remaining barriers will be removed and the work area will be authorized for reentry.

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It is essential that the Asbestos Program Coordinator be provided, if possible, with at least two weeks' notice prior to any asbestos project that is not an emergency response. This will allow the Asbestos Program Coordinator to ensure that a laboratory is available to

analyze the air samples within the timeframe required. Regulatory notifications are required for virtually all asbestos-abatement projects that may be conducted at IIT. Notification periods vary between two to ten working days based upon the size and scope of the project. In addition, notice must be provided to the EPA for building demolitions even if no friable asbestos will be impacted by the work. Therefore, it is important to address any and all suspected ACM that may be impacted by construction or renovation activities as early as possible in order to eliminate any unnecessary delays to the project.

Asbestos-related work activities are regulated by several agencies including the EPA, OSHA and IDPH. Each of these agencies has promulgated rules for the performance of asbestos-related activities. The required work practice and engineering controls vary from project to project based upon the scope of work. However, a contractor must abide, at all time, by all regulatory requirements applicable to a project. Though the asbestos abatement contractor is primarily responsible for compliance with applicable asbestos regulations, all involved parties must ensure that the health and safety of employees, occupants and vendors is protected. Any deficiencies or issues during abatement activities should be immediately brought to the attention of the contractor supervisor and the Asbestos Program Coordinator.

8.3 Personal and Work Area Air Monitoring

Personal and work area air monitoring will be used to evaluate the effectiveness of work practices, to document exposure conditions and to provide justification for the personal protective equipment used.

Personal air samples will be conducted by the abatement contractor on a representative number of individuals for each type of work activity until there is sufficient historic data available to meet the OSHA requirements. Additional monitoring will be conducted as follows:

- 8.3.1 Work area environmental samples will be taken if the work area will be re-occupied after project completion, or if IIT personnel are present immediately outside of the work area (e.g., glove bag removal of pipe insulation in the Power Plant, where access to an area can be restricted, but unprotected employees are in the same space); and
- 8.3.2 Final clearance samples will always be secured for any asbestos project where the disturbance or removal of ACM will occur.

8.4 Equipment

All equipment used for O&M work practices or response actions will be approved for use in asbestos operations. In general, some or all of the following materials and/or equipment may be required for asbestos work:

- 8.4.1 11"x17" Danger Signs: Danger signs will be posted at each entrance to an asbestos regulated area. Signs will conform to OSHA 1910.1001.
- 8.4.2 Airless Sprayer: Airless sprayers are used to apply amended water to ACM.

- 8.4.3 Asbestos Disposal Bags: Six-mil Polyethylene bags that are pre-printed with the following: “Danger; Contains Asbestos Fibers; Avoid Creating Dust; Cancer and Lung Disease Hazard; Breathing Airborne Asbestos, Tremolite, Anthophyllite or Actinolite Fibers is Hazardous to Your Health”; and “RQ Hazardous Substance; Solid, NOS (ASBESTOS); NA 9188; (ORM-E)”. Bags will, in addition, utilize the hazard label currently required by the Illinois Department of Transportation. Bags will be individually labeled with an adhesive tag which lists the project, site, and name of the group that removed the asbestos.
- 8.4.4 Barrier Tape: Barrier tape specific to asbestos-related work will be used to demarcate a regulated area when the work area is not isolated by physical boundaries such as walls with lockable doors.
- 8.4.5 Disposable Coveralls: Disposable, impervious coveralls, equipped with head and foot covers, that are used on asbestos projects to prevent gross contamination from contacting the worker.
- 8.4.6 HEPA-Filtered Vacuum: Such vacuums, designed to be used with a HEPA filter, are available in various sizes and capacities, and can be used with attachments on drills, saws and other tools.
- 8.4.7 Portable Shower: Portable showers are used in conjunction with a clean and dirty change room for personnel decontamination on larger asbestos projects. A portable shower may be appropriate for some types of SS/SD projects.
- 8.4.8 Respirators: Respiratory protection will conform to the requirements of OSHA 1910.1001. Respirator selection, use and maintenance will conform to the requirements of the University’s Respiratory Protection Program.
- 8.4.9 Six-mil polyethylene sheeting: Poly is used to construct critical barriers, to protect finishes, and to contain the release of airborne asbestos from the work area. The poly is generally attached using spray glue and duct tape.
- 8.4.10 Wetting Agent: A chemical wetting agent added to water that is used to soak ACM. This amended water penetrates more effectively than normal water and permits more thorough soaking of the ACM prior to removal or disturbance.

9.0 APPROVAL

The IIT Safety Policy Committee has reviewed this Program and recommended its adoption on July 18, 2005, and this Asbestos Operation and Maintenance Program is approved and effective this 10th day of October, 2005. The Safety Policy Committee will review the contents, implementation and effectiveness of this Program no less than annually (but as often as necessary) and will make modifications as necessary to ensure that it meets all required legal and regulatory requirements and is adequately providing a safe and healthful environment for IIT faculty, employees and students. Any modification to this Program have been reviewed and approved, and are effective as of the date noted on the cover page.

By: /s/ Alan Myerson
Provost and Senior Vice President

By: /s/ John P. Collins
Vice President for Business & Administration

**APPENDIX A
ASBESTOS SURVEY REPORT**

ACM are present within the various facilities owned and operated by IIT. The following is a summary of a building for which a comprehensive asbestos survey has been completed, along with the approximate quantities found. The Asbestos Survey Report for this building and others is available by contacting the Asbestos Program Coordinator.

The following is intended to be representative of types and amounts of ACM found within each area. A more detailed presentation of locations of ACM can be found on detailed drawings within the Asbestos Survey Report. In addition, ACM have been labeled whenever feasible. ACM currently exists in both friable and nonfriable forms. The greatest quantity of ACM is in the nonfriable form, such as floor tile. Most of the ACM is located in areas which are inaccessible or in areas of limited accessibility to building occupants.

Research Tower Building

<u>Material Description</u>	<u>Location</u>	<u>Quantity</u>
Mud Fittings on Fiberglass Lines	All Floors	Approx. 200
Tank Insulation	Penthouse & Lower Level Mech	6 Tanks
Seam Tape on Fan Housings	Penthouse & Lower Level Mech	300 sqft
Gaskets (Assumed)	Mechanical System Components	30 Gaskets
Vibration Isolators (Assumed)	Mechanical System Components	20 Isolators
9"x9" Brown & Black Floor Tile & Mastic	Various Floors	> 1000 sqft
9"x9" White Floor Tile with Black Dots	Various Floors	> 1000 sqft
Stage Curtain (Assumed)	Main Floor Auditorium	500 sqft
Black Mastic Under 12"x12" Floor Tile	Various Floors	> 1000 sqft
9"x9" Beige & Gray Floor Tile & Mastic	Various Floors	> 1000 sqft
Carpet Mastic (Assumed)	Various Floors	> 1000 sqft
Baseboard Mastic	Around Elevators	100 sqft
Mastic Under 12"x12" Beige Floor Tile	Various Floors	> 1000 sqft
Mastic Under 12"x12" White Floor Tile	Various Floors	> 1000 sqft
Mastic Under 12"x12" Tan/Beige Floor Tile	Various Floors	> 1000 sqft
Mastic Under 12"x12" Pink Floor Tile	Various Floors	> 1000 sqft
Aircell Pipe Insulation	Airshafts (Basement to Penthouse)	400 linear feet
Mastic Under 12"x12" Brown/White Floor Tile	Various Floors	> 1000 sqft
Mud Fittings on Steam Return Lines	Lower Level Mechanical	100 fittings

**APPENDIX B
OCCUPANT & CONTRACTOR
NOTIFICATION**

SAMPLE

To: Illinois Institute of Technology Campus Community
From: Asbestos Program Coordinator
Subject: Asbestos-Containing Materials in Campus Buildings

This letter provides notification to Illinois Institute of Technology (IIT) employees and vendors of the presence of asbestos-containing materials (ACMs) in campus buildings. IIT is committed to maintaining a safe and healthy work and learning environment. For more information regarding specific locations of asbestos-containing materials, please see IIT's Asbestos Operations & Maintenance (O&M) Program, or contact the Environmental Health & Safety Department (DEHS).

Asbestos is a common name given to a group of naturally occurring mineral fibers that have been incorporated into a variety of construction products such as wall plaster, floor tile, pipe insulation and asphalt roofing. The presence of asbestos-containing building materials is not uncommon. In fact, the Environmental Protection Agency (EPA) estimates that approximately 90% of buildings constructed before 1980 contain at least some asbestos. These materials pose little or no risk to health unless they are disturbed in such a way that asbestos fibers become airborne and are inhaled and deposited within the lungs. Increased incidence of several illnesses including asbestosis, lung cancer and mesothelioma have been observed in individuals who were persistently exposed to high levels of airborne asbestos in work environments such as mining, milling, shipbuilding, construction and manufacturing.

The DHES conducts on-going building surveys to identify and safely manage previously installed asbestos-containing products. Furthermore, all renovation of campus buildings must be reviewed in advance by DHES to ensure that no ACMs are disturbed without proper safeguards. Work that requires removal or repair of ACMs is restricted to trained and qualified persons only. In order to ensure the safe management of ACM within our facilities, it is important that all members of the campus community observe and abide by the following requirements:

- Presume all building materials contain asbestos until determined otherwise by the Asbestos Program Coordinator (APC).
- Do not remove, cut, drill, sand, grind or otherwise disturb any material that may contain asbestos.
- Do not go above ceilings, behind walls or into building spaces such as attics and crawlspaces unless these areas have been inspected and cleared by the APC
- Do not pull cable or wiring through above-ceiling spaces with asbestos.
- Do not install screws, pins, nails or hangers into asbestos ceiling or wallplasters.
- Be careful not to damage walls, ceilings or floors when moving furniture or equipment.
- Do not brush, sweep or vacuum textures asbestos ceiling plaster or plasterdebris.
- Immediately report any observed damage or deterioration of suspect building materials to your supervisor, building manager or the APC.

IIT maintains a list of certified professionals who conduct building material surveys, coordinate and supervise asbestos construction activities, perform air monitoring and provide training. Asbestos survey results listing specific locations where ACM may be encountered within your building, detailed procedures for working with asbestos and bulk and air monitoring sample analysis results are available for review. If you have specific questions related to this information, or would like the Asbestos Program Coordinator to review the above information with you, please contact the Department of Facilities for assistance.

**APPENDIX C
ASBESTOS RESPONSE ACTION SUMMARY & WORK ORDER REVIEW FORM**

**Illinois Institute of Technology
Asbestos Response Action Summary & Work Order Review Form**

Location of work (address, building, room number), or general description: _____

Sketch of affected area to supplement above description:

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Date(s) of work: _____

Facilities work order number and date: _____

Signature of asbestos supervisor approving work: _____

Printed name of asbestos supervisor approving work: _____

Name(s) of IIT facilities worker(s) performing work: _____

Work practices employed to contain release of fibers and to clean up work area: _____

Volume of waste generated: _____ Disposition of waste: _____

Air monitoring required? YES NO Monitoring performed by: _____

Name of outside contractor used, if any: _____

Attach copies of all relevant documents, reports, air monitoring results, etc.

Send copies of this form and all attached documents to Environmental & Occupational Safety Office, 100 Machinery Hall.

APPENDIX D
Asbestos Containing Building Materials (ACBM) Awareness Training

- I. Various Forms & Uses
 - A. Surfacing Materials-Sprayed or troweled on surfaces (walls, ceilings, and structural materials) for acoustical, decorative, or fireproofing purposes. This includes plaster & fireproofing insulation.
 - B. Thermal System Insulation-Insulation used to inhibit heat transfer or prevent condensation on pipes or boilers, tanks, ducts, and various other components of hot & cold water systems and heating, ventilation, and air conditioning (HVAC) systems. This includes pipe lagging, pipe wrap, block, batt and blanket insulation; cements and muds; and a variety of other products such as gaskets & ropes.
 - C. Miscellaneous Materials- Other, largely non-friable products and materials such as floor tile, ceiling tile, roofing felt, concrete pipe, outdoor siding & fabrics.
 - D. Friable versus non-friable.

- II. Asbestos Containing Materials
 - A. 1% or greater by weight
 - B. Analyzed by certified laboratory
 - C. Polarized Light Microscopy (PLM)
 - D. Transmission Electron Microscopy (TEM)

- III. Health Effects Associated With Asbestos Exposure
 - A. Respiratory System
 - B. Asbestos fibers must be inhaled
 - C. Asbestosis
 - 1. Scarring of the lung
 - 2. Impairs elasticity of the lung
 - 3. Hampers ability to exchange gases
 - 4. Irreversible
 - 5. Latency period 10-20 years
 - D. Lung Cancer
 - 1. Malignant tumor on bronchi lining
 - 2. Surrounds and obstructs air passages
 - 3. Symptom is a persistent cough
 - 4. Latency 20 years
 - E. Mesothelioma
 - 1. Cancer of the lining of the chest or the lining of the abdominal wall
 - 2. Few symptoms in the early stages
 - 3. Rare but almost always fatal
 - 4. Latency period of 20 to 40 years
 - F. Synergistic Relationship With Smoking
 - 1. Smoker 50 X more likely to develop lung cancer

- IV. Locations of ACBM in buildings
 - A. Floor tile and mastic
 - B. Cement elbows
 - C. Pipe Insulation

- V. Recognition of ACBM Condition
 - A. Seven Categories
 - 1. Damaged or significantly damaged thermal system insulation
 - 2. Damaged friable surface ACM
 - 3. Significantly damaged friable surface ACM
 - 4. Damaged or significantly damaged friable miscellaneous ACM
 - 5. ACBM with potential damage
 - 6. ACBM with potential for significant damage
 - 7. Any remaining friable ACBM or friable suspected ACBM

- VI. LEA - Local Educational Authority
 - A. AHERA

- VII. Abatement Activities
 - A. Containment
 - B. Glovebagging

- VIII. Questions

APPENDIX E
REFERENCED DOCUMENTS

29 CFR 1926.1101 OSHA Asbestos Construction Standard National Emission Standard for Hazardous Air Pollutants.

These regulations can be accessed at:

http://www.osha.gov/pls/oshaweb/owadisp.show_document?p_id=10862&p_table=STANDARDS