Asbestos Management Program
Operations and Maintenance Plan

Summary: This University of California, Irvine (UCI) Asbestos Operations and Maintenance (O&M) Plan is to be implemented for the purpose of minimizing and/or eliminating the possibility of exposure to airborne asbestos fibers for UCI building tenants, the public using UCI buildings, tenant employees and maintenance workers.

1. Program Description
This University of California, Irvine (UCI) Asbestos Operations and Maintenance (O&M) Plan is to be implemented for the purpose of minimizing and/or eliminating the possibility of exposure to airborne asbestos fibers for UCI building tenants, the public using UCI buildings, tenant employees and maintenance workers. The UCI Operations and Maintenance Plan will remain in effect until all asbestos-containing materials (ACM) have been completely removed from all UCI facilities.

2. Scope
The UCI O&M Plan is designed to minimize the possibility of accidental disturbance of asbestos-containing materials and to protect UCI workers and building occupants who must work around these materials. The UCI O&M plan includes the following items:

- A written plan,
- A warning and notification system,
- A periodic, routine in-house monitoring or inspection system,
- A work control/permit system to control activities that might disturb ACM,
- A provision for training campus employees who will come in contact with the materials and, if necessary,
- A medical screening program for campus custodial and maintenance employees who work around the materials and,
- A thorough documentation and recordkeeping system.

The UCI O&M Plan follows a systematic approach to document UCI's intentions and to provide an inter-disciplinary approach to the protection of the building occupants and employees. Therefore, technical assistance and recommendations are obtained from relevant parties including Environmental Health & Safety (EH&S), legal counsel, the building staff, Facilities Management (including maintenance and custodial personnel), an architectural/engineering or consulting firm, medical advisor, and possibly contractors and other periodically employed journeymen who may work in the campus facilities.

3. Definitions

- Accredited Inspectors: Must be AHERA-trained as a Building Inspector/Management Planner. (EH&S or EH&S approved representative)


- Asbestos: Includes chrysotile, amosite, crocidolite, tremolite asbestos, anthophyllite asbestos, actinolite asbestos, and any of these minerals that have been chemically treated and/or altered.

- Asbestos-Containing Material (ACM): Any material containing more than 1% asbestos.

- Asbestos-Containing Construction Material (ACCM): Any manufactured construction material which contains more than one tenth of 1 percent asbestos by weight.

- Asbestos Coordinator: The person that exercises control over management and recordkeeping functions relating to UCI in which activities covered by this program take place. This person is an EH&S employee.

- Certified Asbestos Consultant: An asbestos consultant certified by the Division of Occupational Safety and Health (DOSH) pursuant to 8 CCR 1529, Section (q).

- Encapsulation: Asbestos-containing material coated with a penetrating or bridging sealant to prevent release of asbestos fibers into the air.

- Enclosure: Asbestos-containing material physically separated from the building environment by means of erecting permanent airtight barriers.

- Deferred Action: In conjunction with a well-defined O&M Plan, the actual removal, encapsulation or enclosure is postponed to a later date. It should be noted that under this alternative the exposure potential remains and the potential liability to UCI should be considered when deferring action.

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

- Nonfriable: A material which, when dry, may not be crumbled, pulverized, or reduced to powder by hand pressure.

- Operations and Maintenance Plan (O&M): Specific procedures and practices developed for the interim control of asbestos containing materials in buildings until they are removed.

- Removal: The asbestos-containing material is removed from UCI buildings by qualified professionals and, if applicable, state licensed and trained personnel and disposed of by burial in a site specifically approved for asbestos.

- Staff Support Personnel: Personnel include employees from Facilities Management staff or contractors acting on behalf of UC Irvine.

4. Responsibilities

4.1 The UCI Asbestos Coordinator shall implement the asbestos control program. Duties shall include:

4.1.1 Documenting, updating, publicizing, and disseminating the UCI Operations and Maintenance Plan.

4.1.2 Maintaining the documented inventory of asbestos-containing materials and their locations.

4.1.3 Managing the asbestos assessments, surveys and abatement plans.
4.1.4 Participating in the development, review and monitoring of program designs, and/or repair and alteration projects to ensure compliance with applicable standards and regulations when asbestos-containing materials are to be disturbed.

4.1.5 Managing and/or performing periodic asbestos inspections and air monitoring.

4.1.6 Implementing the asbestos training if UCI decides to train in-house crews for small asbestos abatement projects.

4.1.7 Participating in the medical surveillance program when the safety and occupational health physician has determined this program should be established.

4.1.8 Ensuring asbestos programs are documented and recordkeeping requirements are in compliance with regulations.

4.1.9 Responsibility for recordkeeping including maintaining the official UCI Operations and Maintenance Plan, the master list of buildings, employee program and training records, and the master list of regulated areas.

4.1.10 Seeking technical direction and assistance from a qualified industrial hygienist through Environmental Health and Safety (EH&S) for program development and implementation, inspection, and personnel training.

4.1.11 Ensuring that recommended procedures and safety precautions are followed before authorizing construction and maintenance work involving ACM.

4.2 Design & Construction Services (D&CS) - The duties should include:

- Advance partnering with the Asbestos Coordinator on all construction and renovation activities. This includes completion of the EH&S Hazardous Materials Assessment Form.

4.3 Facilities Management (FM)/Project Management and Project Assessment Team – The duties should include:

- Advance partnering with the Asbestos Coordinator on all construction, renovation, maintenance, or equipment repair work. This includes completion of the EH&S Hazardous Materials Assessment Form.

4.4 Facilities Management/Trades Group-The duties should include:

- Advance partnering with the Asbestos Coordinator on all construction, renovation, maintenance, or equipment repair work. This includes completion of the Job Request and Authorization Form for Maintenance Projects-FM Trades Group.
- Informing the Asbestos Coordinator when damage to ACM is observed or when debris needs to be cleaned up.
- Avoiding patch or repair of any damaged ACM until the Asbestos Coordinator has assessed the ACM.

5. Specific Program Components

5.1 WARNINGS AND NOTIFICATION

The UCI Operations and Maintenance Plan has a provision for notifying UCI building occupants of the presence of asbestos-containing materials. Assembly Bill 3713 (i.e., The Connelly Bill) passed in California requires building owners to notify employees of the presence of asbestos in their work place. The notification is performed by the EH&S staff.

EH&S notifies building occupants of the presence of asbestos in buildings on an annual basis by sending out an Asbestos Notification document to employees. The Asbestos Notification is also posted on the EH&S website. This notification follows the requirements of the Connelly Bill. The Asbestos Notification states that a campus-wide asbestos in buildings survey has been conducted and the results are available for review.

UCI personnel often contact EH&S to ask if a material contains asbestos in their building. EH&S reviews existing data, may collect a sample of the material and then notifies the building occupant of the results. EH&S periodically holds open forums to notify building occupants of the presence of asbestos prior to the initiation of building renovation projects in order to answer any questions the occupants might have.

5.1.1 CONTROLLED ACCESS AREAS

Another method used for warning and notification of building occupants is the use of warning labels or stickers in controlled areas:

Definition: Controlled area stickers are for those areas generally accessed by custodians, maintenance workers or contractors but not by the general public or students. Usually, the entrance to these areas is kept locked to prevent unauthorized personnel from entering. The sticker informs people that they are entering an area containing asbestos materials.

Purpose: The purpose of controlled area stickers is to inform workers, before they enter an area to perform any work, that their activities may disturb asbestos materials. The custodial staff, knowing that the area they are going to clean contains asbestos materials, will use proper techniques such as wet mopping and HEPA vacuuming. If a maintenance worker intends to work on equipment in a mechanical room, the sticker alerts the worker to the fact that he/she must find out if his/her work will disturb asbestos-containing materials. If this work includes removal or repair of asbestos-containing materials, the worker must obtain approval from the campus Asbestos Coordinator and fill out a Job Request and Authorization Form for Maintenance Projects-FM Trades Group.

Placement: Controlled area stickers will be placed on all entrances to mechanical rooms, crawl spaces, attics, pipe chases, and pipe tunnels known to contain asbestos. In some cases, the entrance may be a regular door to a boiler room. But in other cases, the entrance may be a two-foot by two-foot panel accessing the bathroom pipe chase. The sticker should be placed on the door so it is visible and easily read. The stickers will read: "Danger—asbestos, cancer and lung disease hazard. Authorized personnel only. Respirators and protective clothing are required in this area."

5.2 PERIODIC INSPECTION AND AIR MONITORING

An inspection of all recorded ACM will be conducted periodically to monitor the condition of the materials. This effort will help ensure that any ACM damage or deterioration is detected and the proper corrective or preventive action is taken. It is a repetitive effort that is used to recognize a situation and avoid potential exposure. The inspection will comprise of a visual and physical evaluation of the ACM to determine its current condition and physical characteristics. Visual records may be used to enhance the value of the inspections. The inspection shall be conducted by the Asbestos Coordinator or others appointed by the Coordinator who must be AHERA-trained as a Building Inspector/Management Planner. The inspection must be done routinely in order to maintain consistency and continuity.

An air monitoring program will provide useful supplemental information to the inspection program. However, air monitoring is used only as a supplemental management tool and not as a replacement for the physical and visual inspection. Air monitoring can only detect an asbestos fiber release after it has occurred and therefore, will not serve as an effective preventive measure. Baseline airborne asbestos fiber levels should be established; a representative number of air samples should be collected throughout each building during normal operating hours. Subsequent air monitoring should be conducted if there is a release or suspected release of asbestos fibers. Air monitoring will be conducted by EH&S staff or their qualified EH&S representative.

5.2.1 PERIODIC INSPECTION

The accredited inspectors should:

- Inspect all friable ACMs and non-friable ACMs for damage or deterioration routinely and report findings to the Asbestos Coordinator.
- Note, assess, and document any changes in the ACM's condition. Photographs of damaged materials should be taken for recordkeeping purposes.
- Investigate the source of debris found by custodial or other staff support personnel.

The Staff Support Personnel (such as Facilities Management staff) and building occupants should:

- Inform the Asbestos Coordinator when damage to the ACM is observed or when debris needs to be cleaned up.
5.2.2 PERIODIC AIR MONITORING

EH&S staff should:

- Conduct non-aggressive air sampling to establish baseline airborne fiber levels. A representative number of air samples should be collected from each building.
- Collect air samples if there is a release or suspected release of asbestos fibers in an area.

This O&M program should continue until all ACM is removed. The O&M program may need to be altered if the ACM is enclosed or encapsulated.

5.3 WORK CONTROL / PERMIT SYSTEM

The efficacy of the O&M Plan is strengthened with the implementation of a Work Control/Permit System. This system ensures proper guidance for activities or projects that might disturb ACMs by requiring a detailed analysis of the scope of the project. The system also necessitates active involvement of the UCI Asbestos Coordinator, as well as, the other divisions within EH&S by requiring feedback from the project originator. In order for the system to be effective, it needs to be activated at the point where projects are generated or initiated.

The system requires completion of the "Job Request and Authorization Form for Maintenance Projects-FM Trades Group" prior to commencement of any project. The application asks for information on the schedule and location of the project, a description of the work, and its potential to affect ACM. This procedure demands that the project manager research existing records and additionally request the assistance of EH&S to identify and locate ACM. EH&S maintains a database of known ACM locations. Furthermore, EH&S is involved with the authorization process and is able to impose conditions with respect to health and safety, suggest work practices, and recommend personal protective equipment. In effect, a safety analysis is imposed on the project.

The "Job Request and Authorization Form for Maintenance Projects-FM Trades Group" and project decision flow charts (Asbestos Projects-Asbestos Decision Flow Chart-Pre-Planning, Asbestos Projects-Asbestos Decision Flow Chart-Abatement Planning, Asbestos Projects-Asbestos Decision Flow Chart-Abatement Process) are valuable tools when designing a project; they are included in this O&M plan in section 5.3.

5.4 O&M PROCEDURES/ WORK PRACTICES

Currently, UCI personnel are not trained or authorized to perform O&M procedures and work practices listed in sections 5.4.1 – 5.4.4. However, contract personnel engaged to perform O&M procedures and work practices are required to follow the elements of this section, as applicable, in addition to all applicable federal, state, and local regulations, standards, and codes governing asbestos management.

Certain UCI Facilities Management and Telecom personnel are trained and authorized to handle ceiling panels, as described in section 5.4.5.

The O&M procedures are designed to structure a program for handling specific types of asbestos-containing materials (ACM) and activity areas. The purpose of the program is to minimize the exposure potential of a specific type of ACM or activity area by addressing and organizing special procedures to: 1) clean up and properly dispose of asbestos fibers previously released, 2) repair damaged ACM, 3) prevent further disturbance or damage of the ACM, and 4) monitor conditions until removal.

Most areas with ACM can be cleaned by wet methods and/or HEPA-vacuuming methods. As different circumstances arise, modifications may be necessary. Regardless of the circumstances, prudent safety precautions should be used. Cleaning and/or removal of ACM should never be performed without a NIOSH-approved respirator and wet methods of cleaning or removal.

When work involves removal of ACM, personnel should follow emergency abatement techniques. These activities shall not take place unless authorized by EH&S, pursuant to Section 5.3 Work Control/Permit System. All removal work shall be performed by AHERA-trained personnel wearing respirators that provide adequate protection from airborne asbestos fiber concentrations existing in the area work. The removal work shall be limited to less than three (<3) square feet of area.

The following paragraphs (5.4.1 – 5.4.5) describe interim repair and control techniques to be employed by qualified personnel when asbestos-containing materials are damaged or deteriorated. Because of the high costs associated with these techniques, they shall generally be considered as temporary control techniques rather than alternatives to removal. When these repair practices are conducted, workers should:

- Wear full-body disposable protective clothing and a powered air-purifying respirator or, at a minimum, a half-face, dual cartridge respirator equipped with HEPA filters and NIOSH-approved for protection from asbestos fibers.
- Isolate the work area with barriers and warning signs.
- Seal off all HVAC ducts, windows and any other sources of air circulation through the work area.
- Pre-clean the work area with wet-cleaning and/or HEPA-vacuuming techniques. Vacuum all the carpets throughout the building with a High Efficiency Particulate Air (HEPA)-filtered vacuum cleaner; NEVER use a conventional cleaner. HEPA-vacuum all curtains, books and other stationary items. Discard vacuum bags and filters in sealed plastic bags according to EPA regulations for disposal of asbestos waste.
- Place a layer of six-mil polyethylene plastic on the floor beneath the item to be repaired/replaced. The plastic should be one foot in length and width for each foot above the floor where the work is to be conducted, but never less than six feet by six feet. Where this work area is confined by walls, workers should extend the plastic up the wall at least one foot and seal the top edge with duct tape.
- Thoroughly dampen all debris with amended water from the clean up and repair work; seal the debris in six-mil polyethylene bags (or two layers of six-mil plastic sheeting), label properly per OSHA, EPA and DOT and dispose of the bags through the EH&S Hazardous Waste Facility located on the UCI campus. If an outside contractor conducts the cleanup, it is that contractor's responsibility to dispose of the debris waste according to hazardous waste disposal regulations.

When performing the repair work, workers should take precautions to minimize disturbances of the asbestos-containing material.

After performing the repair work, workers should clean the floor plastic with wet and/or vacuuming techniques and dispose of with the same procedures accorded asbestos-containing material.

5.4.1 PIPE INSULATION AND MUDDED JOINT FITTINGS

Work area preparation and cleaning shall be in accordance with the requirements previously listed in this section.

Repair minor dents and tears in the protective jacket with duct tape or bridging encapsulant with glass cloth reinforcement. Duct tape should only be used for temporary control until the bridging encapsulant is installed. If the glove bag removal is not feasible, wrap uncovered pipe insulations with protective jackets consisting of bridging encapsulant with glass cloth reinforcement.

Wrap moderately water damaged or contact damaged pipe insulations with new protective jackets, or reisulate affected areas. The source of the water damage must be eliminated. More severely damaged pipe insulations may require removal by glove or gross containment techniques. Request authorization for removal from EH&S.

Monitor the condition of the asbestos-containing materials and non asbestos-containing materials. This will greatly assist in routine monitoring and detection of potential ACM deterioration.

5.4.2 FIREPROOFING

Work area preparation and cleaning shall be in accordance with the requirements listed previously.

On a temporary basis, the exposure potential of fireproofing can be reduced by constructing airtight walls and ceilings around the ACM, enclosing the exposed area. This process will disturb the ACM through contact, vibration, etc., so the same isolation and control techniques used for removal projects must be incorporated into this type of work. An enclosure project would generally be applicable only to a small area. Enclosure of a large area often requires such effort and expense that removal is a more cost effective and practical solution.

Fireproofing may be sprayed with an encapsulant if the fireproofing is well bonded to its substrate and is less than one inch thick. This is to be considered a temporary control measure. As with enclosure, isolation and control techniques used for removal projects must be incorporated into encapsulation work. Test results have shown that, due to the impact of the spray, spraying with an encapsulant can entrain into the air more fibers than a gross wet removal project.
If the fireproofing has localized water damage and/or is becoming delaminated in a small area, spot removal of the damaged material may be necessary. If the remaining fireproofing is well bonded to its substrate, it can then be encapsulated; however, the source of the water must be eliminated.

If work involves hanging ducts, conduit, or pipes, etc., from surfaces sprayed with fireproofing, the asbestos material around the area may have to be abated prior to the work. Avoid disturbing fireproofing whenever possible.

5.4.3 ACOUSTICAL PLASTERS (SPRAYED-ON OR TROWELED-ON)

Work area preparation and cleaning shall be in accordance with the requirements listed previously. If the plaster is in good condition, with no delamination, deterioration, or signs of water damage, it should be left alone but carefully monitored for signs of change in status. If the plaster is water damaged and/or is becoming delaminated from the substrate, it should be removed rather than encapsulated. Encapsulation can make the condition worse by increasing the rate of delamination. The source of the water damage must be eliminated. Request authorization for removal from EH&S.

Avoid disturbing acoustical plaster by not hanging plants, drilling holes in the ceiling, and moving furniture, etc. Work area preparation and cleanup for all types of maintenance and repair work shall be in accordance with the requirements listed previously in this section. When the plaster must be disturbed, mist the affected area with amended water (soap and water solution) and use a HEPA vacuum to collect fibers being released.

5.4.4 MISCELLANEOUS/CEMENTITIOUS MATERIALS

Fiber released from cementitious (nonfriable) materials is normally extremely low unless these materials are broken, drilled, sanded, or otherwise disturbed. During disturbance, the materials should be thoroughly dampened followed by a thorough HEPA-equipped vacuuming to collect fibers being released. Follow the work area preparation and cleanup requirements previously listed. Some examples of cementitious and miscellaneous nonfriable materials that may contain asbestos are:

- Floor tiles
- Wall plasters
- Scratch coats
- Transite paneling
- Exterior siding
- Friction products
- Tile underlay
- Transite pipes
- Drywall plaster
- Linoleum
- Roofing felts

5.4.5 ASBESTOS CONTAINING CEILING PANELS

Work area preparation and cleaning shall be in accordance with the requirements listed previously. UCI personnel in Facilities Management and Telecommunications sometimes displace asbestos-containing ceiling panels. Only personnel trained in Asbestos Awareness and equipped with proper respiratory protection (issued by EH&S) and disposable coveralls should displace these panels. Asbestos ceiling panels should be carefully lifted out of the T-bar and slid gently over on top of the adjacent ceiling panels without breaking or tipping the panel. Caution should be taken to make sure that the ceiling panel covers are not damaged by abrasion. If pieces of the ceiling panel fall to the ground, carefully wipe the area with a damp cloth and place large debris of the panel in a scaled plastic bag and notify EH&S to pick up the debris for proper disposal.

When moving ceiling panels in occupied areas, caution should be taken not to alarm the building occupants of asbestos hazards. When moving asbestos-containing ceiling panels in small enclosed offices, ask the occupant to leave the space until the required work is complete. If a large number of ceiling panels are damaged during the controlled displacement, notify EH&S so that a proper cleanup is conducted and air monitoring can be performed if necessary.

6. Regulatory Requirements

All work shall be performed in strict accordance with all applicable federal, state, and local regulations, standards, and codes governing asbestos abatement, and any other trade work done in conjunction with the abatement.

The most recent editions of any relevant regulation, standard, document, or code shall be in effect. Where conflict among the requirements or with these specifications exists, the most stringent requirements shall apply.

Such documents include, but are not limited to, the following:

- U.S. Department of Labor, Occupational Safety and Health Administration (OSHA)
  - Personal Protective Equipment (29 CFR 1926, Subpart E)
  - Specifications for Accident Prevention, Signs, and Tags (29 CFR 1910.145)

- California Division of Occupational Safety and Health (Cal/OSHA)
  - Title 8 of the California Code of Regulations, General Industry Safety Orders, Section 5208 - Asbestos Standard (8 CCR GISO 5208) and Construction 8 CCR 1529
  - Registration for Asbestos-Related Work (8 CCR 341.6 through 341.14)
  - Respiratory Protective Equipment Standard (8 CCR GISO 5144)
  - Hazard Communication Standard (8 CCR GISO 5194)
  - Accident Prevention Program (8 CCR GISO 3203)
  - Access to Employee Exposure and Medical Records (8 CCR GISO 3204)
  - Accident Prevention Signs (8 CCR GISO 6003)
  - Emergency Action Plan (8 CCR GISO 3220)
  - Fire Prevention Plan (8 CCR GISO 3221)
  - Electrical Safety Orders (8 CCR Chapter 4, Subchapter 5)
  - Construction Safety Orders (8 CCR Chapter 4, Subchapter 4)
7. Reporting Requirements

Notification to regulatory agencies is generally made by the asbestos contractor. Notification to affected UCI personnel is facilitated by the asbestos coordinator. All notifications shall be performed in strict accordance with all applicable federal, state, and local regulations, standards, and codes governing asbestos abatement, and any other trade work done in conjunction with the abatement.

The most recent editions of any relevant regulation, standard, document, or code shall be in effect. Where conflict among the requirements or with these specifications exists, the most stringent requirements shall apply.

Such documents include, but are not limited to, those listed in section 6.0.

8. Information and External References

8.1 Recordkeeping

The original of all documents pertaining to this O&M Plan will be kept on file at EH&S. The standard documents to be kept on file will be:

UCI O&M Plan - Original
Reports of Survey and Laboratory Analyses - Original
Records of Areas Removed or Encapsulated
Disposal Records Verification

8.2 Summary of ACM on Campus

Consult with EH&S for the most updated summary.

8.3 Forms, Protocols, and Decision Flow Charts

- EH&S Hazardous Materials Assessment Form
- Job Request Authorization Form for Maintenance Projects-FM Trades Group
- Maintenance Projects-Asbestos Decision Flow Chart-Pre-Planning
- Maintenance Projects-Asbestos Decision Flow Chart-Abatement Planning
- Maintenance Projects-Asbestos Decision Flow Chart-Abatement Process

9. Competency Assessment and Training Requirements

Generally, EH&S conducts two types of asbestos awareness training:

1. The asbestos section in the Core Safety Training is informational, promotes a general awareness of asbestos issues, and targets building occupants;

2. The asbestos section of the Hazard Communication for Trades, Building Facilities and Custodial Workers is similar in scope but targets building maintenance workers and introduces personal protective equipment, project protocol, and the work permit system.

The asbestos section of the Hazard Communication for Trades, Building Facilities and Custodial Workers training covers:

- Historical Perspective
- Characteristics of Asbestos
- Health Effects of Asbestos
- Identification and Recognition of Asbestos-Containing Materials and Damage
- Housekeeping
- Proper Response to Fiber Release Episodes
- Relative Risks
- O&M Plan
- Project Protocol
- Work Permits
- Personal Protective Equipment

The training and educational program may be supplemented with training videos. Also, an EH&S informational pamphlet is made available to attendees of the training sessions.

A quiz is administered to determine competency.

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