

THE UNIVERSITY OF OKLAHOMA HEALTH SCIENCES CENTER
THE UNIVERSITY OF OKLAHOMA - TULSA



Asbestos Operation and Maintenance (O&M) Program

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**ASBESTOS OPERATION AND MAINTENANCE (O&M) PROGRAM
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**THE UNIVERSITY OF OKLAHOMA HEALTH SCIENCES CENTER
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ASBESTOS OPERATION AND MAINTENANCE (O&M) PROGRAM

I. INTRODUCTION

Asbestos is a known human carcinogen. Health effects of asbestos exposure include lung cancer, asbestosis, mesothelioma and other cancers. Cigarette smoking and asbestos exposure can have a combined effect which puts the exposed person at a risk 50-90 times that of a non-exposed person of contracting lung cancer. In order to protect the health and well-being of the students, faculty, and staff at the University of Oklahoma (OU) Oklahoma City and Tulsa campuses and related facilities against any potential health risk from this carcinogen, this formal Operation and Maintenance (O&M) Program has been established.

This O&M Program consists of a set of procedures applied to building cleaning, maintenance, and general operations in order to maintain a building environment free from any asbestos contamination.

In this program are provisions for each type of asbestos-containing material (ACM) found in the campus buildings. These types are:

- SURFACING MATERIAL - ACM sprayed or troweled onto surfaces such as acoustical plaster found on ceilings and walls, and fire-proofing material on structural members,
- THERMAL SYSTEM INSULATION - ACM applied to pipes, boilers, tanks, ducts, etc., to prevent heat loss or gain or water condensation, and
- MISCELLANEOUS MATERIAL - other ACM such as floor tile, wallboard, siding, and transite materials.

The materials in the first two categories are of particular concern since they tend to be friable, i.e., can be reduced to a powder by hand pressure. Friable materials are more likely to release fibers when disturbed. However, non-friable materials may release fibers if ground, cut, sanded, or otherwise manipulated.

The O&M Program is intended to be flexible in that every situation on campus cannot be foreseen in advance. Methods of response may change from time to time while others may be added. New procedures will be developed as experience and job requirements expand. The O&M Program has three main goals:

- identification of areas where damage has occurred,
- clean up and repair of previously damaged ACM in a prioritized manner to remove asbestos fibers that may have been previously released, and
- minimizing future fiber release through the control of activities that might disturb ACM.

All protocol established under this O&M Program will comply with the State of Oklahoma Department of Labor, Asbestos Division, Asbestos Statutes (Title 40, Sections 451-457) and *Abatement of Friable Asbestos Material Rules* and Occupational Safety and Health Administration (OSHA) regulations 29 CFR 1910.1001 and 29 CFR 1926.1101.

II. SCOPE

This O & M Program applies to the OU buildings identified in Appendix A.

III. PROGRAM LIMITATIONS

This O & M Program has been developed to allow timely response to maintenance problems such as installing valves, repairing traps, repairing leaks, or changing gaskets in areas where insulation that is in good condition is known to contain asbestos. The program will allow for minor repairs involving encapsulation procedures where they are appropriate. This program will be used as required during typical maintenance activities. All O&M projects will be of short duration (1 or 2 days) and will be limited to the following types of work.

- A. With the exception of demolition, up to 10 square feet or 25 linear feet of asbestos-containing surfacing or thermal materials may be performed as O&M work regardless of the purpose of abatement. However, all surfacing material removal will be performed within a modified glovebag or mini-containment.
- B. Up to 160 square feet or 250 linear feet of surfacing thermal insulation for the purpose of maintaining, repairing, or servicing boilers, piping, valves, or pipe fittings may be considered O&M work.
 - 1. Surfacing material removal in excess of 10 square feet will be performed within a full negative pressure containment with attached shower.
 - 2. Asbestos insulation abated for the purpose of piping system removal will only occur under O&M conditions when the piping system is replaced to serve in its original function and capacity.
- C. Quantities in excess of 160 square feet or 250 linear feet will be submitted to the Oklahoma Department of Labor (ODOL) for review and approval prior to being performed under this O&M plan.
- D. Encapsulation procedures will be performed without quantity limitations utilizing the procedures found in Section XV.
- E. Asbestos-containing ceiling tile and duct tape will be abated without quantity limitations using the procedures found in Section XIX. and Section XXI.
- F. Small scrapes will be performed in accordance with procedures found in Section XXII.

IV. BUILDING INSPECTIONS

At this time, a total inventory of the ACM locations on the campuses does not exist. As additional areas are inspected and sampled, records are updated to more fully document the new findings.

At the Oklahoma City campus and related facilities, routine visual inspection of areas with friable ACM known to be present will be performed twice per year by the O & M Supervisor for Oklahoma City and a representative from the OU Health Sciences Center (OUHSC) Environmental Health and Safety Office

(EHSO), who are licensed AHERA Inspectors.

At the Tulsa Campuses and related facilities, routine visual inspection of areas with friable ACM known to be present will be performed twice per year by OU-Tulsa Lead Carpenter and a representative from the EHSO, who is a licensed AHERA Inspector.

V. LABELS AND SIGNAGE

- A. Pipes, boilers, storage vessels, structural members or equipment with insulating material that has been tested positive for ACM will be labeled with caution labels. Such caution labels will be printed in letters of sufficient size and contrast as to be readily visible and legible. Each room or area will have a minimum of one (1) such label and such additional labels as may be necessary to ensure ready visibility and legibility.
- B. The absence of a label does not ensure that the material does not contain asbestos. Any material that might be removed, penetrated, damaged or otherwise distributed by repair, remodeling, renovation, maintenance or other activity must either be analyzed or assumed/presumed to be ACM.
- C. For facilities with ACM used as acoustical material on ceilings or walls, a notice will be posted informing employees of the presence of asbestos in the work place. Notice will read, at a minimum:

NOTICE TO EMPLOYEE

This facility has been inspected for the presence of
asbestos containing material.
Asbestos containing material is present in this facility.
Asbestos containing material may cause health problems.

VI. RESPONSIBILITIES

- A. ASBESTOS PROGRAM MANAGER
 - 1. The APM is responsible for the implementation of the O&M Program. Duties are as follows:
 - a. establish work practices and procedures,
 - b. ensure employees are properly trained,
 - c. ensure proper equipment and material are available to carry out job assignments,
 - d. approve work orders for all abatement work,
 - e. fills out required reports with the ODOL,
 - f. prepare all necessary paper work for the official 30 year file,

- g. ensure necessary decontamination facilities,
 - h. perform appropriate sampling as may be required,
 - i. determine appropriate response actions,
 - j. control and monitor all campus activities involving ACM, and
 - k. periodically review the *OU Respiratory Protection Program* and *O&M Program* for effectiveness (at least annually) and makes changes as necessary as approved by the ODOL.
2. The APM for the OU Oklahoma City and Tulsa Campuses and related facilities is Cheri Marcham, PhD, CIH, CSP, CHMM who is the University Environmental Health and Safety Officer.
 3. The APM may delegate some duties to the O&M Supervisor, but retains responsibility for administration of the program. The O&M Supervisor is Eloy Candelaria who is the OUHSC Assistant Director of Operations for Construction Services.

B. O&M WORKERS

O&M workers are responsible for:

1. performing O&M procedures in accordance with this *O&M Program* and all other applicable rules and regulations,
2. using the protective equipment supplied to them in accordance with their instructions and training, and
3. reporting any incident not in accordance with the O&M protocol or rules and regulations.

C. GENERAL STAFF AND MAINTENANCE WORKERS

University employees whose job functions are to repair or maintain the mechanical systems or clean the campus buildings may come in contact with ACM, but should not disturb the ACM. Employees who come in contact with, or have reason to believe they may be in contact with ACM, are to contact the APM immediately for an appropriate response action.

VII. TRAINING

A. ASBESTOS

1. **General Staff**

General staff whose normal work duties might cause them to come in contact with ACM will be trained in an asbestos awareness session provided by the EHSO which includes:

- a. information regarding types of ACM and its various uses and forms;
- b. information on the health effects associated with asbestos exposure;
- c. instructions to contact the APM whenever suspect or potential ACM must be disturbed prior to commencing work; and
- d. instructions to NOT:
 - (1) drill holes in asbestos-containing materials,
 - (2) hang plants or pictures on structures covered with asbestos containing materials,
 - (3) sand or otherwise abrade asbestos-containing floor tile,
 - (4) damage asbestos containing materials,
 - (5) install curtains, drapes or dividers in such a way that they may damage asbestos containing materials,
 - (6) dust floors, ceilings, molding or other surfaces in asbestos contaminated environments with a dry brush or sweep with a dry broom,
 - (7) use an ordinary vacuum to clean up asbestos-containing debris,
 - (8) remove ceiling tiles below asbestos-containing materials,
 - (9) remove ventilation system filters dry, nor
 - (10) shake ventilation system filters.

2. Maintenance Staff/O&M Workers

Members of the Site Support/Operations maintenance staff [electricians, air conditioning mechanics, plumbers, Steam and Chilled Water Plant (SCWP) employees, etc.] who may be required to handle ACM will be trained and licensed as asbestos workers through at least a four-day asbestos abatement worker's course and appropriate refresher courses approved by the EPA and/or ODOL.

3. O&M Supervisor

The O&M Supervisor will be trained and licensed as an asbestos supervisor through the following:

- a. an asbestos abatement supervisor's course and appropriate refresher courses approved by the ODOL and EPA;
- b. a two-day, or equivalent, course in confined space entry following the NIOSH curriculum in confined space entry;
- c. the NIOSH 582 course, *Analysis of Airborne Asbestos Dust*, or equivalent, or a minimum of a two-day course in air monitoring techniques;
- d. current cardiopulmonary resuscitation (CPR) training, which may be provided by the American Heart Association, the American Red Cross,

or other approved training provider; and

- e. current first aid training, which may be provided by the American Red Cross, or other approved training provider.

B. HAZARD COMMUNICATION TRAINING

All OUHSC and OU-Tulsa employees are to be trained regarding the hazardous chemicals that may be encountered in their worksite within 30 days of employment, whenever changes in work practices occur, and at least annually thereafter. Additional information may be found in the OUHSC/OU-Tulsa *Hazard Communication Policy and Program*.

C. ADDITIONAL TRAINING

O&M workers and supervisors will receive documented training covering the following topics:

1. OUHSC/OU-Tulsa *Asbestos O&M Program* procedures and requirements
2. Instructions to contact the APM whenever suspect or potential ACM must be disturbed prior to commencing work
3. OUHSC/OU-Tulsa *Respiratory Protection Program* procedures and requirements
4. General Safety
 - a. Electrical
 - b. Ladders and scaffolding
 - c. Slip, trip and fall hazards
 - d. Fire safety
 - e. Heat exhaustion
 - f. Heat stroke
 - g. Emergency egress
5. Confined Space Limitations
 - a. No O&M work will be performed in a permit-required confined space without a permit issued by the APM and the O&M supervisor. Any work that must be performed in such a space will require special considerations and will be performed in accordance with the OUHSC/OU-Tulsa *Confined Space Program*.
 - b. Definition of confined space is as follows:

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- (1) is large enough and so configured that an employee can bodily enter and perform assigned work,
 - (2) has limited or restricted means of entry or exit, and
 - (3) is not designed for continuous employee occupancy.
- c. Definition of a permit-required confined space is a confined space that:
- (1) contains a material that has the potential for engulfing an entrant,
 - (2) has an internal configuration such that an entrant could be trapped or asphyxiated by inwardly converging walls or by a floor which slopes downward and tapers to a smaller cross section,
 - (3) contains any other recognized serious safety or health hazard, or
 - (4) contains or has a known potential to contain a hazardous atmosphere, such as:
 - (a) oxygen deficiency;
 - (b) carbon monoxide poisoning;
 - (c) flammable gas, vapor or mist greater than 10% of LEL; and/or
 - (d) any exposure greater than an OSHA PEL.

VIII. OUTSIDE CONTRACTORS

All contractors providing services to the OU Oklahoma City or Tulsa campuses or related facilities shall comply with the following:

- A. Contractors shall be responsible for providing a training and education program for their employees which meets the applicable requirements of the Federal Hazard Communication Standard (29 CFR 1910.1200 or 29 CFR 1926.59) and/or the Oklahoma Hazard Communication Standard (Title 40, Sections 401-424).
- B. Contractors whose materials or work pose a health hazard to OU employees shall be responsible for providing material safety data sheets (MSDSs) to the EHSO for those materials. They must also inform the affected OU employees' supervisor(s) of the nature and extent of the hazard(s).
- C. Contractors who encounter suspected ACM during the course of their work and who must disturb, contact, or damage the suspected ACM must immediately stop work and contact the EHSO who will determine whether the material contains asbestos.
- D. Contractors are responsible for ensuring that any subcontractors comply with these requirements.

IX. RECORDKEEPING REQUIREMENTS

All records will be compiled by the APM or designated O&M Supervisor.

A. BULK SAMPLES

1. Since a complete inventory of ACM on the campuses is not available, the APM will keep sample results on file of known ACM. This file will be updated as new information is gathered.
2. Where bulk samples have not been previously collected, samples will be collected of materials that will be disturbed during any renovation, demolition or maintenance activity, or the material will be assumed to be ACM.
3. Bulk samples will be collected by those persons holding a current AHERA Inspector accreditation and ODOL Inspector license.
4. Thermal insulation that has been found to be positive for ACM will be properly labeled under the direction of the APM.
5. A copy of laboratory reports for bulk samples related to O&M activities will be retained by the APM.

B. WORK ORDERS AND TROUBLE REPORTS

1. No O&M work will begin without the issuance of a trouble report from the APM. See Appendix B, page B-1 for *Asbestos Trouble Report Form*.
2. This trouble report will either indicate bulk sample analysis results or that the material is to be assumed ACM.
3. Copies of the trouble report will be given to the O&M workers by the O&M Supervisor after being approved by signature of the APM. All O&M activities will be performed by at least two licensed O&M workers. When each project is completed, the O&M workers will fill out a Small Scale Activity Report Form for each trouble report issued including the completion date, number of man hours used and their names. Copies of completed *Small Scale Activity Report Forms* must be submitted to the O&M Supervisor who will submit a copy to the APM. A copy of the *Small Scale Activity Report Form* may be found in Appendix B, page B-2.

C. AIR SAMPLING

1. Air monitoring will occur on all O&M activities and will be performed by the EHSO.
 - a. All monitoring performed on O&M activities other than glovebag activities will be consistent with Subchapter 11 of Chapter 50, Oklahoma Department of Labor *Abatement of Friable Asbestos Material Rules*, and will include, at a minimum:
 - (1) one (1) personal air sample for every four workers, with a minimum of two (2);

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- (2) one (1) inside area monitor;
 - (3) one (1) from the loadout area, if applicable;
 - (4) one (1) outside area directly outside and adjacent to the work area;
 - (5) one (1) sample per shift from the exhaust of the negative air machine, if applicable;
 - (6) one (1) sample immediately outside the clean room of the decontamination system, if applicable; and
 - (7) clearance samples as follows:
 - (a) a minimum of one clearance sample for every 1500 square feet, or one clearance sample for every 15,000 cubic feet, whichever is greater, and
 - (b) a minimum of one sample per room or discrete area.
- b. Monitoring for glovebag activities will include, at a minimum,
- (1) personal air monitoring on all workers,
 - (2) one (1) inside area monitor if desired, and
 - (3) at least one (1) clearance sample. (Clearance sample(s) will not be required if the personal and inside area (where applicable) samples do not exceed a measured value of 0.01 fibers/cc with a detection limit below 0.01 fibers/cc.)
- c. All personnel performing O&M activities will be monitored throughout the procedures including during preparation activities if damaged ACM is present.
- d. Requirements for clearance samples for all O&M projects are as follows.
- (1) Clearance samples will be performed in accordance with current ODOL requirements.
 - (2) Clearance sample(s) will be collected at a flow rate of no more than 10 liters per minute for 25-millimeter cassettes and will have a total volume of at least 1200 liters of air.
 - (3) An area will be considered clear if the upper confidence limit of the airborne fiber concentration is less than 0.01 fibers/cc or less than background levels, as determined prior to abatement, whichever is greater.
- e. All EHSO employees performing air monitoring for O&M projects will have received:
- (1) the NIOSH Course Number 582 entitled *Sampling and Analysis of Airborne Asbestos Dust*, the *Asbestos Air Monitoring Course*, or the OUHSC graduate Industrial Hygiene *OEH 5843 Measurements* class, and
 - (2) the AHERA asbestos abatement worker's or inspector's course, or the OUHSC Asbestos Awareness class and the OUHSC/OU-

Tulsa respirator protection training class.

- f. Personnel performing air monitoring for O&M projects will not enter any demarcated work area without presenting a valid asbestos worker's license.
2. All personal air samples will be reported with the type of respirator being used by the employee.
3. Blanks must be submitted with each day's samples.
4. Copies of the laboratory reports on all air samples taken as a part of an O&M project will be sent to the ODOL as a part of the monthly report.

D. EHSO ACTION REPORTS

1. For each O&M activity, the EHSO will issue an Action Report consisting of the following:
 - a. bulk sample report of ACM involved;
 - b. type of project, i.e., glovebag, repair, etc.;
 - c. start and completion dates;
 - d. amount of linear feet or square feet removed, encapsulated, etc.;
 - e. preventative measures taken;
 - f. precise location of project;
 - g. personnel who performed the project, including names and social security numbers; and
 - h. copies of all air sampling results.
2. Copies of all related documentation for that O&M project will be retained in the Action Report file at the EHSO.

E. ODOL MONTHLY REPORTS

At the end of each month, or within 30 days, whichever is greater, the APM will file a report to the ODOL of all O&M activities performed during that month. The *Monthly Report Form* to be used is found in Appendix B, pages B-3 and B-4. Directions for completing the *Monthly Report Form* is found in Appendix B, page B-5. Air sampling results and waste receipts (where applicable) will be attached to the form. As OU is an exempt entity, no fees are required to be submitted with the report.

F. STORAGE AND DISPOSAL REPORTS

1. All waste generated from O&M projects will be properly stored and inventoried on the *OUHSC/OU-Tulsa Asbestos O&M Waste Inventory* form found on page A-6. Such storage may occur until such time that a sufficient amount has accumulated to warrant disposal. Bulk sample reports, if applicable, and MSDSs for all chemicals, if any, used in the removal of the asbestos should be noted and attached to the inventory form.
2. A licensed asbestos transporter will be contracted to transport ACM off site for disposal. The O&M Supervisor will ensure that the contractor is provided with the appropriate bulk sample reports and MSDSs.
3. Waste receipts provided for disposal must be forwarded to the APM so that a report may be sent to the ODOL within 30 days or along with a current monthly report, whichever is quicker.

X. MEDICAL SURVEILLANCE

OU will provide pre-placement, annual and termination medical examinations for O&M workers and bulk and air sampling technicians, and exposure examinations for employees accidentally exposed to asbestos while on the job.

- A. Pre-placement, annual, and termination medical examinations shall follow the protocol specified in 29 CFR 1926.1101:
- B. Examinations for employees accidentally exposed to asbestos will be left to the discretion of the physician depending upon the nature and extent of the circumstances.
- C. Initial examination will take place within 30 calendar days following the worker's first performance of asbestos-related activities.
- D. Annual examinations should take place on, or before, the expiration date of the last physical.
- E. Termination examination will be offered to employees within 30 calendar days of termination of O&M duties. Termination examination will not be provided if an initial or annual examination was performed within 90 days prior to termination. Employees who decline the exam will be required to sign a form stating so.
- F. A copy of physician's statements for O&M workers will be sent to the employee and his/her supervisor, and one copy will remain on file at the EHSO.
- G. A copy of physician's statements for bulk and air sampling technicians will be given to the employee and one copy will remain on file at the EHSO.
- H. Medical records will be maintained by the OUHSC Family Medicine Center and the physician's statements will be maintained by the APM for a minimum of 30 years from the date of cessation of potential exposure to airborne concentrations of asbestos fiber or

30 years from date of termination of employee, whichever is longer.

XI. EQUIPMENT AND SUPPLIES

A. AMENDED WATER

All O&M activities will be performed utilizing wet methods which involves treating the material with amended water solution containing a wetting agent. This wetting agent may be 50% polyoxyethylene ether and 50% polyethylene ether or appropriate substitute mixed in a concentration of 1 fluid ounce to 5 gallons of water or as specified by its manufacturer. This will be applied using an airless sprayer that will deliver 1 gallon per minute at no greater than 400 psi pressure.

B. HEPA VACUUMS

1. HEPA vacuums will be used on all O&M work on campus.
2. Only personnel trained on and familiar with HEPA vacuums will use HEPA equipment.
3. HEPA vacuums will be stored with duct tape placed over the inlet of the tank to prevent any fiber leakage.
4. Hoses will be duct taped at each end in a like manner.
5. Attachments will be kept clean and stored in a properly labeled and sealed plastic bag between use.
6. HEPA vacuums will be cleaned as needed utilizing the following methods.
 - a. Workers will wear protective clothing and, as a minimum, fullface air purifying respirators.
 - b. Bags and filters will be removed in an established work area or other containment as authorized by the APM.
 - c. After being misted thoroughly with water, bags and filters will be carefully removed.
7. HEPA vacuums will be stored in a secured limited access stockroom between uses. The vacuum will be labeled with appropriate asbestos warning labels.
8. Manufacturer instructions will be followed for all maintenance performed on HEPA vacuums.
9. HEPA filters should be changed periodically, depending on the volume of usage.
10. Records will be maintained for all services performed and filter replacement.

C. NEGATIVE PRESSURE FILTRATION DEVICES

1. Only personnel trained and familiar with negative pressure filtration devices will use and maintain this equipment.
2. Machines will be stored with the intake and exhaust ducts plugged and taped to prevent any fiber release.
3. An appropriate warning label will be placed on the equipment.
4. Decontamination of the exterior or the replacement of filters will only be performed in a designated work area.
5. Transportation of equipment to a designated area will be performed after sealing the unit with 6-mil plastic.
6. Decontamination will be done by HEPA vacuuming the exterior surfaces followed by wet wiping with amended water. Water and rags will be disposed of as contaminated waste.
7. Filters will be removed with great care after misting them with amended water, and will be disposed of as contaminated waste.
8. HEPA filters should be changed periodically depending on the volume of usage.
9. Manufacturer instructions will be followed for all maintenance performed on negative pressure filtration devices.
10. Records will be maintained for all service performed and filter replacements.

D. PROTECTIVE CLOTHING AND PERSONAL EQUIPMENT

When performing O&M activities, all employees will wear:

1. respirators as required by the OUHSC/OU-Tulsa *Respiratory Protection Program* (respirators will be required for all phases of preparation for removal, repair, or cleaning where damaged ACM is present),
2. one-piece construction disposable with hood and boots (ankles will be taped when needed to take up slack and reduce the chance of tripping),
3. gloves for hand protection,
4. disposable underwear for modesty (when needed),
5. hard hats (where required),
6. safety shoes or rubber boots (as required), and

7. hearing protection (where required).

E. VEHICLES

1. Asbestos will be transported by OUHSC/OU-Tulsa O&M personnel on campus only. A licensed asbestos transporter will be contracted to transport ACM off site.
2. If it is known, or if there is reason to expect that ACM fibers have been released into a vehicle, cleaning will be done immediately following the procedures found in Section XIII of this manual.
 - a. Employees performing the cleaning procedure will wear protective clothing as described in Section XI.D.
 - b. Employees will use the Double-Suit Decontamination method detailed in Section XII.B.
3. In the event of any accidental spill of ACM or any ACM-containing bag breakage occurs in any vehicle, the APM must be notified immediately. Only vehicles approved by the APM will be used to transport ACM.

XII. PERSONNEL DECONTAMINATION

Employees will always decontaminate themselves every time they leave the work area. Depending on the size of the project, one of two decontamination methods will be used. The O&M Supervisor will instruct each employee at the onset of a project as to which method will be utilized.

A. PORTABLE SHOWER DECONTAMINATION

1. This will consist of a module that may be constructed on site or portable so it can be moved from site to site. This module will consist of a clean room, shower area, and dirty room separated by air-locks made of double sheets of poly and will meet the requirements outlined in Section XII.C.
2. Ten foot-candles of illumination will be provided in all areas of the decontamination unit.
3. Procedures to exit the work area through the portable shower decontamination unit is as follows:
 - a. Employees will remove their disposable suit in the dirty room and, while leaving their respirator on, proceed to the shower.
 - b. Employees will shower and remove the respirator after they have washed themselves and the exterior of the respirator. Cartridges will be disposed of as contaminated waste.
 - c. Employees will proceed to the clean room and put on street clothing.

B. DOUBLE-SUIT DECONTAMINATION

This is an alternative personal decontamination procedure for use on small projects such as glovebags.

1. The location for the three chambered decontamination unit will be designated by the O&M Supervisor. The decontamination unit must meet the requirements outlined below.
2. In order to enter the work area, the employee will remove street clothes and don one disposable suit.
3. Respirators will be put on before entering the actual work area.
4. Upon leaving the work area, the employee will step into a clean room or other designated clean area. Each employee will HEPA vacuum the exterior surface of the disposable suit and wet wipe the exterior surfaces of their respirator with amended water.
5. Rags used to wipe respirator and suit will be placed in disposable bags to be disposed of as contaminated waste.
6. A clean suit will be put on over the work suit. While still wearing the respirator, the employee will proceed to the shower.
7. The respirator will be removed after the employee has showered.
8. The respirator cartridges and the disposable suit will be placed in a disposable bag to be disposed of as contaminated waste.
9. If a vehicle is to be used to transport employees to a shower, a non-contaminated driver will be utilized. No one in a suit and respirator will drive a vehicle.

C. SHOWER FACILITY REQUIREMENTS

1. The facility will be constructed so as to permit use by either sex without embarrassment or harassment.
2. All shower water waste will be filtered with five micron filters. The shower filter and residue will be disposed of as asbestos-contaminated material.
3. The shower will have hot and cold water supplied from the building's existing domestic hot and cold water lines.
4. A liquid soap dispenser will be provided in the shower.
5. The shower will be stable, free of sharp edges, and trip or fall hazards.
6. Shower grates will be constructed of non-porous materials.

7. Ten foot-candles of illumination will be provided in all areas of the decontamination unit.
8. Negative pressure will be created by a HEPA filtered suction device and a flow of make-up air from the clean room through the shower to the dirty room.
9. The temperature of the clean room and the shower will be maintained above 50°F.

XIII. CLEANING PROCEDURES

Special cleaning practices may be needed for any building containing ACM on surfacing material or thermal insulation. There are two types of cleaning procedures: (1) initial cleaning of a building where friable ACM is, or has been present; and (2) routine cleaning done on a regular basis or scheduled following the initial cleaning. Cleaning will be performed when samples collection of dust material reveal ACM contamination.

A. INITIAL CLEANING PROCEDURE

Only licensed O&M workers will perform initial cleaning procedures. Initial cleaning procedures can also be used as a part of a decontamination procedure as needed.

1. Background air sample(s) will be required before the procedures are to begin and must be 0.01 fibers/cc or lower. If a higher fiber count is present, or visible ACM is laying about, then a fiber release episode exists and those procedures will apply.
2. The area must be secured to prevent entry by unauthorized personnel. Functional areas will be locked and signs posted on all entries and exits. In hallways, sections at a time may be secured with barrier tape and signage. If possible, this procedure will be performed when the building is unoccupied.
3. Equipment to be used will be HEPA equipment, vacuum, mops, mop bucket, mist sprayer, muslin cloth, ladders and 6-mil plastic.
4. Employees will wear protective disposable suits and respirators. Muslin cloth will be used to wrap mop heads.
5. Starting at the entry way of the work area or area to be cleaned, a clean area will be established by HEPA vacuuming the floor, then wet wiping with mop. This area will be of sufficient size that will enable two people to stand on and change clothing as needed. A layer of 6-mil plastic will be laid and taped on this area.
6. All movable items in the work area will be HEPA vacuumed and wet wiped, then handed to an employee who has remained in the designed clean area, who will pass to the outside. Non-movable items will have to be vacuumed and wet wiped as they remain in the area.
7. Attached fixtures, such as drinking fountains and fan coil units, will have to be

cleaned on the inside as well as the exterior.

8. Ceilings that do not contain asbestos will be cleaned first with the HEPA vacuum. Also, the tops of light fixtures will be HEPA vacuumed and wet wiped. Be sure power has been turned off before cleaning lights or wall outlets.
 9. Walls that do not contain asbestos will then be HEPA vacuumed and wet wiped.
 10. The floors will be cleaned last and will be HEPA vacuumed and wet wiped. After HEPA vacuuming, if carpeted, the carpet will be steam cleaned. If tiled, floor will be washed thoroughly by flood method and mopped dry.
 11. All excess water used will be collected and disposed of as contaminated waste through a 5 micron filter.
 12. Following completion of work, the muslin cloth used to cover the mop head, all rags used in the cleaning will be placed in disposable bags and disposed of as contaminated waste.
 13. All equipment is to be cleaned and passed out of the work area. Plastic used to cover the clean area will be disposed of as contaminated waste.
 14. Employees will then follow personal decontamination procedures.
 15. The area can be opened to the public and items removed from the room can be placed back.
- B. Where only non-friable ACM is present, routine cleaning procedures can be performed by non-licensed employees who have been given a two hour awareness course, and are familiar with asbestos locations.

XIV. GLOVEBAG PROCEDURES

A. GENERAL INFORMATION

1. A glovebag may not be used for more than one application.
2. Electrical equipment below the level of the glovebag or within arm's reach of glovebag must be deactivated. All electrical equipment used by the workers must be provided with GFI protection.
3. A minimum of two people will be required to perform all glovebagging projects.
4. Personnel involved in glovebag abatement will be required to:
 - a. wear appropriate personal protective equipment (e.g., proper respiratory protection and full-body protection) in accordance with Oklahoma rules Section 380:50-15-2 and Section 380:50-15-6, respectively; and

- b. fully utilize a decontamination shower which has a location which may be reached by using a clean protective suit over the potentially contaminated work suit according to Section XII.B. This shower must meet the requirements outlined in Section XII.C. of this manual.

B. ISOLATION OF WORK AREA

To prevent contamination of the building environment, the work area where glovebagging is to be performed must be isolated from the rest of the building environment. There are four classifications and procedures listed as follows:

1. Unoccupied Areas

Areas such as equipment rooms, attics, pipe chases, etc., will require critical barriers over doorways, windows, tunnel accesses, etc., to isolate the area from the rest of the building. Critical barriers will be constructed by a single layer of 6-mil poly. Where critical barriers are not feasible, two layers of 6-mil poly will be laid down on the floor, barrier tape will be put up to identify the work area, and the glovebag will be carefully smoke tested and maintained under negative pressure for the duration of the job.

2. Occupied Areas

Areas such as offices, public bathrooms, etc., present special problems. The functional area involved will be evacuated of the general public. Critical barriers will be installed as appropriate. Movable items will be cleaned with a HEPA-filtered vacuum and wet wiped to remove any asbestos-containing dust, and moved out of the functional area. Non-movable items will be sealed with 6-mil plastic and sealed to the floor with duct tape to prevent contamination. If the functional area cannot be evacuated, then a separate work area can be constructed using 6-mil plastic and the necessary support frame. When this is done, background air samples of occupied areas selected by the APM will be taken throughout the duration of the project.

3. Equipment Rooms Common with Return or Makeup with HVAC System

Any glovebag work to be done in an equipment room where the HVAC system's return or makeup air is common with the equipment room, the system will be shut down and critical barriers will be installed on the return air or makeup grills. If the system cannot be turned off, a wall will be constructed in such a manner as to separate the building's air flow from the equipment room air. Walls will be constructed using a single 6-mil layer of poly.

4. Special Cases

Certain situations such as utility tunnels or the SCWP facility provide a unique situation in that critical barriers or separate work areas are not feasible. When this situation arises two layers of 6-mil poly will be laid down on the floor, barrier tape will be put up to identify the work area, and the glovebag will be carefully smoke tested and maintained under negative pressure throughout the duration of the job.

C. PRE-WORK ACTIVITIES

1. Tools required for glovebag operations include:
 - a. 2 knives (one inside and one outside the glove bag),
 - b. 1 brush,
 - c. 1 pair wire cutters,
 - d. 1 bone saw for cutting around pipe insulation,
 - e. 1 HEPA vacuum,
 - f. penetrating encapsulant in a hand sprayer,
 - g. bridging encapsulant prepared and placed in baggies when edges of ACM pipe material will remain,
 - h. smoke tubes and aspirator bulbs,
 - i. rags or paper towels,
 - j. duct tape,
 - k. several glovebags in case in the first one is damaged,
 - l. 1 hand sprayer or spray bottle with amended water, and
 - m. 6 mil plastic film.
2. Portable shower decontamination chambers will be constructed or a shower will be designated if the two suit method will be used.
3. The integrity of the pipe where the work is to be performed will be checked to determine if loose pipe lagging several feet or even yards away from the work could be jarred loose by the activity. Loose or questionable areas will be wrapped with two layers of 6 mil poly and taped before glovebagging. No glovebagging will be done if a fiber release situation already exists until the fiber release is dealt with. The APM is to be contacted if this is the case.
4. The temperature of the piping will be checked. These procedures only apply to pipe temperatures of 150°F or less.

D. WORK PROCEDURES

1. Place signs and warning tape around work area to avoid accidental entry by personnel or building occupants.

2. Turn off or lockdown all air-handling units, gas and electrical services to the work area. All HVAC systems will be shut down, or if impractical, modified and sealed with critical barriers.
3. Place two layers of 6 mil poly under the pipe to be glovebagged. The size will be equal to twice the length of the glovebag used in all four directions as measured from the center of where the glovebag will be. If the area where work is being performed is smaller than these requirements, then run poly to the walls and overlap the wall one foot up.
4. HEPA vacuum and wet wipe the pipe insulation directly over the poly.
5. Wrap one layer of duct tape around the pipe at each location where glovebag will be attached.
6. Cut down sides of glovebag to accommodate the pipe diameter. Cut far enough so as to leave ample working space on the top of pipe inside the bag.
7. Place tools into tool pouch.
8. Place glovebag around section of pipe insulation to be removed, fold the top together and seal it with duct tape.
9. Duct tape the ends of the glovebag to the previously wrapped tape.
10. Insert the wand from the hand sprayer through the water sleeve. Water sleeve can be made by making a small slit in the side of the bag in line with the vacuum sleeve, tape wand to bag. Alternatively, a spray bottle of amended water previously placed in the tool pouch may be utilized.
11. Using the smoke tube and aspirator bulb, place tube into the vacuum sleeve, fill bag with smoke. Remove the smoke tube and twist vacuum sleeve closed. While holding the vacuum sleeve tightly, gently squeeze the glovebag and look for any leaks. If leaks are found, they will be repaired and the bag retested until there are no leaks.
12. Attach nozzle of HEPA vacuum, using tape, through the vacuum sleeve, turn on the vacuum only slightly to put negative pressure on the side of the bag, being careful not to collapse the bag.
13. Using the sprayer with an amended water, spray the outside surface of insulation thoroughly.
14. Use bone saw to cut the insulation of each end of the section inside the glovebag. Throughout this process, amended water is to be applied to the cutting area to keep dust to a minimum.
15. Once ends are cut, the section should be slit from end to end using the utility knife. The cut will be made along the bottom of the pipe, or in its natural seam if

found with amended water continuously applied to prevent dry fibers. Some insulation will have wire or steel bands that will have to be clipped with wire cutters as well.

16. When finished, spray and clean the tools and place back into tool pouch.
17. Lift the insulation from the pipe carefully and gently place in the bottom of glovebag. Place it so the driest area is pointing up and wet it down thoroughly with the sprayer.
18. Use the brush, rags or paper towels, and amended water to scrub and wipe down the exposed piping until no visible residue remains. The putty knife will be used to scrape hardened material.
19. Wipe down the top and sides of the glovebag interior and push all visible residue to the lowest possible part of the glovebag.
20. Encapsulate the exposed ends of remaining ACM insulation with bridging encapsulant. Encapsulate bare piping and non-ACM contaminated pipe wrap with penetrating encapsulant.
21. Place reusable tools into one or more of the gloves and pull sleeve inside out. Twist sleeve tightly between tools and bag body. Wrap duct tape on twisted portion and cut the sleeve through the taped twisted section. The contaminated tools may be placed directly into the next glovebag or may be decontaminated by submerging in a bucket of soapy water. Open glove under water and clean and dry tools. Waste and sleeve will be disposed of as contaminated waste. Rags or paper towels cannot be reused or cleaned and will be left in the glovebag.
22. Turn on the HEPA vacuum and collapse glovebag.
23. Remove spray wand from bag and place hand over hole to prevent vacuum loss.
24. Remove vacuum nozzle from bag again, holding hole to prevent loss of vacuum.
25. With the removed insulation in the bottom of the bag, twist the bag several times and tape together, separating the top from the bottom of the bag.
26. Slip a 6 mil disposal bag over the glovebag (still attached to pipe). Remove the tape and open the top of the glovebag as the HEPA vacuum is being run with the opening. Cut glovebag loose from pipe and fold it down into the disposal bag.
27. Twist the top of the disposal bag closed after removing excess air from bag with the HEPA vacuum and seal with duct tape, making a goose neck. To be ready for disposal, glovebags will be double bagged and the bag will have the appropriate warning label.

E. EMERGENCY PROCEDURES

1. If problems develop with a glovebag preventing completion of work and the ACM has been distributed within the glovebag, but no outside breach has occurred, then collapse the glovebag and proceed with the removal steps up to cutting the bag loose from the pipe. Then, place a second glovebag over the first bag and proceed, removing the first glovebag and the ACM with the second glovebag. When using glovebags, leave sufficient slack so that in an emergency another bag can be put over it to finish work.
2. Minor tears that may occur in the glovebag can be taped up because of the negative pressure inside the bag. If a tear develops, coordination will be needed between both employees, one patching the tear while the other operates HEPA vacuum on and off to maintain negative pressure without collapsing the bag.
3. If a spill occurs, such as material leaving the glovebag and falling on the floor, or visible fibers escaping through a tear, if the material has fallen on the poly on the floor, then ensure it is well saturated and fold the corners of the first layer over the material and tape closed. Proceed with the removal procedures of the glovebag. Contact the APM to report a fiber release who will contact the ODOL by telephone.
4. Employees shall never stop in the middle of a glovebag procedure and leave friable ACM exposed to the work area unless there is an immediate danger to life or health. Employees must seal off the exposed ACM first, then report the fiber release episode.

XV. ENCAPSULATION PROCEDURES**A. GENERAL**

1. Encapsulants will not be applied to any surfacing ACM unless:
 - a. the asbestos surface has first been tested for substrate adhesion and/or encapsulant penetration in cooperation with ODOL, and
 - b. the encapsulant has been certified by Underwriters Laboratories to be a rated component of the fireproofing system.
2. Encapsulants will not be applied to any surfacing ACM which has been water damaged, which are subject to water or physical damage after encapsulation, or which exhibit signs of delamination.

B. SAMPLING

1. A background area sample will be taken in the work area if extensive damage to ACM has been noted.
2. Personal samples will be taken during any and all encapsulation projects.

3. Area samples will be collected when a barrier has been constructed separating the work area from an occupied larger area. These area samples will be taken from the area outside of the work enclosure.

C. PROTECTIVE CLOTHING

1. On all encapsulation projects, workers will wear the following:
 - a. respirators as required by the OUHSC *Respiratory Protection Program*,
 - b. disposable suits consisting of hood and boots (one-piece construction), and
 - c. gloves.
2. Workers may put on a clean disposable suit over the one being worn, and walk to the next area of tape to be removed. The outer suit may be removed during the work, and used repeatedly for walking either to other tape removal areas, or to the shower at the end of the work period.

D. ENCAPSULATION PROCEDURES

1. Isolate and clean the work area by HEPA vacuuming and/or wet wiping to remove accumulated dust and fibers.
2. Place 6 mil poly on the floor under the work area.
3. Apply one coat of penetrating encapsulant per the manufacturer's recommendations.
4. Apply tinted bridging encapsulant per the manufacturer's recommendations.
5. If necessary, apply nylon netting around edges of pipes and fittings. Ensure that the encapsulant penetrates the netting.
6. Apply a second coat of encapsulant (of another color if desired) after the first has dried.
7. Dispose of all waste and poly on floor in 6 mil labeled disposal bags upon completion of the work.
8. Remove excess air from the bag with the HEPA vacuum, twist the bag closed, and seal with duct tape.
9. Area barriers, where applicable, will not be removed until air samples have been analyzed and clearance is given.
10. All personnel must decontaminate following the procedures as outlined in Section XII.

XVI. MINI-ENCLOSURES

A mini-enclosure will be used in areas that, due to space limitation, a full containment cannot be constructed, nor can a glovebag be used. A mini-enclosure can be portable or can be made by lining a closet with a double layer of 6 mil poly.

- A. Enclosures are to be constructed with a double layer 6 mil plastic sheeting.
- B. Enclosures will be equipped with negative pressure filtration devices. A HEPA vacuum can be utilized if the enclosure is small enough. For example, a HEPA vacuum can that runs at 105 cfm can provide four air changes per hour for a mini-enclosure that is 12' X 12' X 8'.
- C. The amount of surfacing or thermal insulation which may be removed within a mini-enclosure shall be limited to 10 square feet, which need not be contiguous.
- D. Mini-enclosures for the removal of miscellaneous friable asbestos materials covered under Subchapter 23 of the ODOL *Abatement of Friable Asbestos Materials Rules* shall be limited in size to 160 square feet.
- E. Critical barriers will be erected within the mini-enclosure, if applicable.
- F. All electrical power within arm's reach of asbestos workers in a mini-enclosure must be locked out in accordance with OUHSC/OU-Tulsa Lockout/Tagout procedures.
- G. A small change room approximately three feet square made of 6 mil poly will be contiguous to the mini enclosure to allow the worker to vacuum off the protective clothing and to change suits before proceeding to the to shower.

XVII. UTILITY TUNNEL PROCEDURES

These procedures are to be used for cleanup, repairs and limited removal of asbestos-containing thermal insulation within the OU Oklahoma City campus utility tunnel system. These procedures are only to be used with the advance notification and consent of the APM and in tunnel areas containing an airborne fiber concentration of less than 0.01 f/cc as determined by background air sample. If airborne fiber concentration is at or above 0.01 f/cc, fiber release procedures in Section XXIII. must be followed.

A. GENERAL PROCEDURES

- 1. All prep work within the tunnel will be performed by workers in full protective clothing and wearing, as a minimum, a fullface air purifying respirator. Daily monitoring for heat stress will occur. Cool vests may be worn when the tunnel ambient temperature exceeds 105E F, or when it is suspected that the interior suit temperature will increase above the worker comfort range as indicated by heat stress monitoring.
- 2. A work area will be established by barrier ribbon (ribbon requiring protective clothing) attached across the tunnel (side to side) at each approach to the area.

3. A minimum of three workers are required to perform these procedures. One worker will remain outside the work area for emergency assistance and to drive a vehicle for transport to the central decontamination station if needed.
4. The built-in tunnel lighting system will remain on during these-projects and will afford some project lighting, however, additional temporary lighting may be required.
5. A variance request from the ODOL is required for live electric within a work area. Requests must include procedures for protecting workers from the risk of electrical shock and must be approved by an electrical engineer.
6. Electric conduit or electrical lines that penetrate the work area will be wrapped or isolated with 6 mil plastic throughout the work area and will extend 6 feet outside the work area in each direction.
7. Temporary lighting systems, along with any other electrical tools and equipment, will be on ground fault circuit interrupters connected to circuits that are outside of the work area.
8. Any standing water in the work area will be properly removed before any abatement begins.

B. MINI-ENCLOSURES

1. Pressure differential machine(s) will be placed outside at one end of the work area. Machine exhaust will always point the opposite direction to the nearest building entrance. Makeup air will be obtained through the tunnel access hatches or adjacent mechanical rooms. A single layer of 6 mil poly will be taped to the floor just outside of the work area at the other end for the workers to change suits on.
2. Barricades will be placed around all open tunnel hatches when used for make-up air. Barricades are to prevent the general public or students from accidentally stepping into an open hole.
3. Once the pressure differential machine(s) has been turned on and cleanup has begun, it will remain on until work has been completed and the area has passed clearance testing.

C. GLOVEBAGGING

1. The utility tunnels provide a unique situation in that critical barriers or separate work areas are not feasible. When this situation arises two layers of 6 mil poly will be laid down on the floor, barrier tape will be put up to identify the work area, and the glovebag will be carefully smoke tested and maintained under negative pressure throughout the duration of the job.
2. Employees will follow the procedure outlined in Section XIV. except that the

tunnel ventilation system will not be shut down.

3. Employees will remain in constant contact with the SCWP in the event that a fiber release occurs so that the ventilation system to the tunnel may be shut down.
4. In the event of a fiber release in the utility tunnel system, fiber release procedures in Section XXIV. must be followed.

XVIII. FLOOR TILE

Whenever possible, floor tile will be left in place. If removal of floor tile is necessary, it will be done so that it will not become friable and will not be subjected to sanding, grinding, cutting or abrading. If floor tile must be subjected to sanding, grinding, cutting or abrading or will become friable during removal, a licensed asbestos abatement contractor will be hired to perform removal under appropriate abatement conditions.

The ODOL does not regulate the removal of vinyl asbestos floor tile unless it has been declared Regulated Asbestos Containing Material (RACM) by an accredited inspector. If it has been declared RACM, a licensed asbestos abatement contractor will be hired to perform removal under appropriate abatement conditions.

Non-friable floor tile removal will be done in accordance with the procedures for Class II removal found in 29 CFR 1926.1101 and will include the following:

- A. A current negative exposure assessment (within 12 months of the project) consisting of air monitoring of a similar project showing the PEL and excursion limit are not anticipated to be exceeded must be in place for the following procedures to apply.
- B. All floor tile removal will be conducted in a regulated area demarcated and with limited access.
- C. All floor tile removal will be supervised by a competent person, defined as an one who has met the requirements for an Asbestos Supervisor as defined by this program.
- D. All workers performing floor tile removal will be trained by the EHSO in a course meeting the requirements of 29 CFR 1926.1001 for Class II floor tile work.
- E. Floor tile will be wetted with a detergent (dish-washing liquid at one tablespoon per gallon) and water mixture.
- F. Tiles will be removed intact wherever possible and placed in unmarked 6-mil polyethylene bags for disposal in a standard sanitary landfill.
- G. Rough spots on adhesive (if it contains asbestos) may be scraped using wet methods with a blade or putty knife, but must not be sanded.
- H. Asbestos-containing flooring or its backing shall not be sanded. Sanding of adhesive containing asbestos may be done only by a licensed asbestos abatement contractor under

full containment.

XIX. CEILING TILE

- A. All appropriate ODOL and NESHAP notices will be filed with those agencies by the APM.
- B. Prior to the start of the ceiling tile removal project, the ODOL will make an on-site inspection of the area to determine the applicability of these procedures. The inspector will determine, at that time, if electrical power above the ceiling grid must be deactivated.
- C. All air handler units (heaters, air conditioners, blowers) will be turned off.
- D. The ceiling tile removal will only be done when the building is not occupied.
- E. All personal items, all books, instruction aids, and other items and all movable furniture will be removed from the room.
- F. Decontamination facilities must be established.
- G. Critical barriers must be erected. If the area above the ceiling tiles to be remove constitutes an air plenum, design of critical barriers in the plenum will be determined by the APM.
- H. Workers will wear disposable, full body coveralls and fullface respirators.
- I. Negative pressure filtration devices in the tile removal area will be installed, vented internally, and provide a minimum of one air change for each 30 minutes.
- J. A 6-mil poly drop cloth will be used under the work teams, in case a tile falls.
- K. Workers will work in teams, with one worker removing and bagging tiles, and one worker holding a HEPA vacuum near the grid.
- L. Tiles will be placed in 6-mil asbestos-marked bags, sealed with duct tape. This bag will be placed in a second bag for transport. Extra large bags may be required.
- M. The tiles will be disposed of in an approved asbestos landfill, and a copy of the waste shipment records will be provided to the APM for inclusion in the ODOL monthly report.
- N. The ceiling suspension grid will be HEPA vacuumed and wet wiped.
- O. Air monitoring tests will be run in accordance with ODOL *Rules for Abatement of Friable Asbestos Materials*.

XX. ASBESTOS-CONTAINING CEILING TEXTURING

- A. Asbestos-containing ceiling texturing, when in place and undamaged, does not constitute a significant health risk.

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- B. Painting of such material is not considered by the ODOL to be asbestos encapsulation and therefore is not required to be performed by licensed asbestos abatement workers.
 - C. Removal of the material constitutes an asbestos O&M or abatement project and will be done only by licensed asbestos abatement workers using the following procedures.
 - 1. All required DOL notices and NESHAP notices will be filed with those agencies by the APM.
 - 2. All air handler units (heater, air-conditioners, blowers) will be turned off.
 - 3. The ceiling texturing removal will only be done when the work area is not occupied.
 - 4. All movable items will be removed from the room.
 - 5. Decontamination facilities will be established, but need not be contiguous with the ceiling texturing removal area if workers can travel to the facilities without endangering the general public or the environment.
 - 6. Critical barriers will be erected.
 - 7. A single layer of wall and floor poly will be erected in compliance with DOL rules.
 - 8. Workers will wear protective full body coveralls and fullface respirators.
 - 9. Negative air machines will be installed in the removal area, vented internally, and will provide a minimum of one air change each 30 minutes.
 - 10. Air monitoring will be performed in accordance with Subchapter 11 of DOL rules.

XXI. ASBESTOS-CONTAINING DUCT TAPE ABATEMENT

- A. The tape may be removed only by licensed abatement workers.
- B. Workers will wear a protective suit, gloves, and at a minimum, a fullface air purifying respirator. Workers may put on a clean disposable suit over the one being worn, and walk to the next area of tape to be removed. The outer suit may be removed during the work, and used repeatedly for walking either to other tape removal areas, or to the shower at the end of the work period.
- C. Tape on air handling equipment or ductwork may be removed only while the air handlers are off.
- D. The tape may be removed only from areas that are unoccupied at the time.
- E. The area under the tape is to be covered with a 6-mil poly drop cloth.

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- F. The tape should be saturated with a wetting agent. Detergent-based residential type cleaning agents may be used.
 - G. The tape should be peeled away and dropped into a properly labeled asbestos disposal bag.
 - H. The surface under the tape should be cleaned with a cloth soaked in wetting agent, and the cloth then placed in the asbestos disposal bag.
 - I. The drop cloth is to be rolled or folded and placed in the asbestos disposal bag.
 - J. After drying, the area under the tape is to be sprayed or brushed with paint, varnish, shellac, or other sealant. Care should be taken with flammable sprays.
 - K. Passive air monitoring in the area will be performed after tape removal. Clearance will be 0.01 fibers per cubic centimeter, or background level, whichever is higher.

XXII. SMALL SCRAPES FOR DRILLING OF ASBESTOS-CONTAINING TEXTURING SURFACES ON DRYWALL

Surface texturing material found on some drywall material on the OU Oklahoma City campus has been determined to contain small amounts of asbestos. Where point counting indicates levels >1 percent asbestos and the need arises to drill into this material for the purpose of mounting shelving or other similar circumstance, the following protocol must be followed.

- A. These procedures must be carried out by a licensed O&M worker wearing gloves.
- B. Locate the areas on the wall where drilling is to occur. Delineate the areas surrounding these locations. This can be up to approximately one square foot of area space.
- C. Spray the area to be removed thoroughly with amended water.
- D. Carefully scrape the surfacing layer into a sealing plastic bag.
- E. Wipe the area with a damp cloth. Dispose of the cloth into the plastic bag.
- F. Remove the gloves and place them in the sealing plastic bag for disposal.
- G. Spray the area with a clear penetrating encapsulant.
- H. These procedures will apply only to drilling or power tools of any sort utilized to penetrate the painted, textured surface. Smooth penetrating objects such as nails utilized to hang pictures will not require any special or extraordinary protocol to be used.

XXIII. NON-FRIABLE MATERIAL

- A. The ODOL does not regulate the removal of non-friable material unless it has been declared Regulated Asbestos Containing Material (RACM) by an accredited inspector. If it has been declared RACM, a licensed asbestos abatement contractor will be hired to

perform removal under appropriate abatement conditions.

- B. Removal of non-friable material will be done in accordance with the procedures for Class II removal found in 29 CFR 1926.1101.
- C. A current negative exposure assessment (within 12 months of the project) consisting of air monitoring of a similar project showing the PEL and excursion limit are not anticipated to be exceeded must be in place for the following procedures to apply.
- D. All Class II non-friable material removal will be conducted in a regulated area demarcated and with limited access.
- E. All Class II non-friable material removal will be supervised by a competent person, defined as an one who has met the requirements for an Asbestos Supervisor as defined by this program.
- F. All workers performing Class II non-friable material removal will be trained by the EHSO in a course meeting the requirements of 29 CFR 1926.1001 for Class II work.
- G. Non-friable ACM will be handled in such a manner as to keep the material non-friable. Wet methods will be used.
- H. Asbestos cement (transite) that has not deteriorated to the point that it has become friable will be removed using the following additional procedures:
 - 1. Employees will wear NIOSH-approved respiratory protection.
 - 2. The material will be removed carefully, avoiding breakage. Should breakage occur, the broken edges will be immediately sprayed with a penetrating asbestos encapsulant, using a garden sprayer.
 - 3. All asbestos-cement material will be loaded and unloaded by hand to avoid breaking. Loads will be soaked thoroughly to keep them wet during transport.
 - 4. If kept constantly wet, it may be disposed of in an ordinary landfill.
- I. The cutting, drilling or sawing of transite or other asbestos-cement products is not an O&M procedure and will not be performed by OUHSC or OU-Tulsa personnel. If these operations are required, the APM will contact a licensed asbestos abatement contractor to perform such services.

XXIV. FIBER RELEASE PROCEDURES

A. GENERAL

- 1. A fiber release episode is defined as the physical release of ACM visible on the floor or other surfaces, ACM that has been recently damaged, or an air sampling concentration of 0.01 fibers/cc or higher.

2. Only licensed O&M employees will be used to clean up fiber release episodes. All employees are encouraged to report the presence of any suspected ACM on floors, water or physical damage, or any other evidence of possible fiber release to the APM.

B. MINOR FIBER RELEASE EPISODE PROCEDURES (UNOCCUPIED AREAS ONLY)

1. Notify the APM.
2. Air handling units to the affected area will be turned off and the functional area will be secured. Air sampling may be done to determine the boundaries of the work area and for proper respiratory protection selection by the APM. Air handling units can be turned back on only after the affected functional area is identified and temporary modifications are made to the system to isolate work areas from the rest of the building structure.
3. Employees will wear a disposable suit and the appropriate respirator. Appropriate danger signs will be posted at all entrances and exits.
4. All power to the affected area will be turned off. Power for working systems will be installed independent from the affected system and will have ground fault receptacles.
5. Employees will thoroughly saturate the fallen debris with amended water. Debris will then be placed in a 6-mil disposable bag for disposal as contaminated waste.
6. Repairs or removal of the damaged material will then occur, as determined by the APM.
7. The work area will then be cleaned in accordance with the initial cleaning procedure.
8. Employees will follow personal decontamination procedures as specified in Section XII.
9. Based on a post-work air sample of 0.01 fibers/cc or lower, barriers and signage will be removed after final clearance is given.

C. MAJOR FIBER RELEASE PROCEDURES (OCCUPIED AREAS)

1. Evacuate all occupants from building area.
2. Lock and secure functional area and post warning signs.
3. Report to APM, who will report the episode to the ODOL.
4. Work will begin as per ODOL instructions.

XXV. STORAGE AND TRANSPORTATION TO THE LANDFILL**A. STORAGE**

ACM will be stored on campus only at sites authorized by the APM.

1. Storage containers will be leak-proof with a locking lid and with appropriate labels. The outside surfaces will be kept clean and not contaminated with asbestos debris.
2. The containers will be lined with double 6-mil barrel liners.
3. Material placed in containers will be in sealed double bags containing asbestos warning labels which states, "DANGER, CONTAINS ASBESTOS FIBERS, AVOID CREATING DUST, CANCER AND LUNG DISEASE HAZARD."
4. The outer bag will be labeled with the name of the waste generator (OUHSC) and the location at which the waste was generated (building and street address).
5. Materials placed in containers will be logged in on an *OUHSC/OU-Tulsa Asbestos O&M Waste Inventory Form*, a copy of which may be found in Appendix B, page B-6.
6. When containers are full, the APM will be notified so that disposal at an approved landfill may be arranged.

B. TRANSPORTATION TO THE LANDFILL

1. Only vehicles and contractors approved by the APM will be used to transport ACM to an approved landfill.
2. Disposal will only be at a landfill licensed by the Oklahoma Department of Environmental Quality to accept asbestos waste, and as coordinated with the APM.
3. Only licensed asbestos workers will pick up, transfer, and deliver asbestos waste.
4. Vehicles will be enclosed and the cargo area will be double lined with 6-mil plastic. If the asbestos waste is placed inside sealed, 6-mil lined 55 gallon drums prior to loading onto the truck, the cargo area will not have to be lined with 6-mil plastic.
5. Vehicles will post appropriate DOT placarding for amounts greater than 3 bags or one disposal barrel.
6. The 55 gallon drums may be disposed at the landfill along with asbestos waste.
7. Bags or drums will be very carefully handled to prevent puncture or damage, never thrown or tossed around.

8. Workers will wear, at a minimum, protective clothing and a fullface respirator and have available duct tape, paper towels, amended water, and extra disposable bags. The interior of the drums will be wet wiped and the rags used will be disposed of as asbestos waste.
9. Signage will be displayed during loading and unloading procedures with the statement, "DANGER. ASBESTOS. CANCER AND LUNG DISEASE HAZARD. AUTHORIZED PERSONNEL ONLY. RESPIRATORS AND PROTECTIVE CLOTHING ARE REQUIRED IN THIS AREA."
10. After the material has been placed in the landfill and before leaving, the workers will carefully remove their protective clothing, wipe down the outside of the respirator, and dispose of the protective clothing, wipe down rags and respirator filters in double 6-mil asbestos disposal bags and place them in the landfill.

XXVI. FIRE AND WORK SAFETY

A. EMERGENCY EGRESS

1. Before work is to begin, an emergency escape plan will be formulated and tailored to each project. The egress plan will be familiar to all employees on the project.
2. Emergency lighting shall be that which is already provided in each building and has battery back-up and sufficient power to illuminate obstructions between all areas of the containment and the exits.
3. Visible and illuminated emergency lights are provided in each building and shall not be compromised by any asbestos activity.

B. FIRE SAFETY

Employees will ensure that all sources of ignition are removed and that gas and other fuel sources are turned off, such as pilot lights in boilers, heaters, hot water tanks, etc.

1. Lighters, matches, and smoking are strictly prohibited in the work area.
2. Any possible fire hazards will be removed prior to hanging plastic. This includes removal of any chemicals, flammable liquids, heat sensitive materials, etc.
3. Trash and debris will be kept to a minimum, i.e., tape, poly, bags, lumber, etc.
4. Polyethylene can produce toxic fumes when ignited and therefore shall not be placed against hot surfaces.
5. A fire extinguisher will be present at every work site.
6. In case of fire, the fire hazard becomes more immediate than the asbestos hazard and workers may need to violate the plastic barrier.

C. ACCIDENTS

Employees shall contact Campus Police and Public Safety at 405/271-4911 in Oklahoma City or Campus Security at 918/660-3333 in Tulsa in the event of an emergency involving a fire, chemical spill, or medical emergency. The APM will then be notified immediately of any accidents or breach of containment. The APM will then notify the ODOL within 24 hours.

D. ELECTRICAL SAFETY

1. All electrical equipment used for O&M work must be provided GFI protection.
2. Electrical power must be locked out in accordance with OUHSC Lockout/Tagout procedures as follows:
 - a. for glovebag work, all electrical within arms reach of asbestos workers and electrical equipment below the level of the glovebag,
 - b. for mini-enclosure work, all electrical within arms reach of asbestos workers, and
 - c. for all other work where water is used, electrical within the demarcated area.

APPENDIX A

OU OKLAHOMA CITY AND TULSA BUILDINGS

OU OKLAHOMA CITY AND TULSA BUILDINGS**Oklahoma City Campus**

Allied Health Practice Center	1600 N. Phillips	73104-4699
Allied Health Shop Building	815 N. E. 15 th St.	73104
Animal Resources Annex	1020 N. Everest	73117
Basic Sciences Education Building	941 Stanton L. Young	73104-5043
Biomedical Sciences Building	940 Stanton L. Young	73104-5042
Child Study Center	1100 N. E. 13 th St.	73117-1099
College of Nursing Building	1100 N. Stonewall	73117-1297
College of Health Building	801 N.E. 13 th St.	73104-5072
College of Pharmacy Building	1100 N. Stonewall	73117-1223
Dental Clinical Sciences Building	1001 Stanton L. Young	73117-1228
Dermatology Clinic	619 N.E. 13 th St.	73104-5071
Faculty House	601 N.E. 14 th St.	73104-5001
Family Medicine Center	900 N.E. 10 th St.	73104
G. Rainey Williams Pavilion	920 Stanton L. Young	73104-5020
John W. Keys Speech & Hearing Center	825 N.E. 14 th St.	73104-4649
Motor Pool	751 N.E. Park Pl.	73104
O'Donoghue Rehabilitation Institute	1122 N. E. 13 th St.	73117-1039
OU Physicians Building	825 N. E. 10 th St.	73104
Robert M. Bird Library	1000 Stanton L. Young	73117-1213
Rogers Building	800 N.E. 15 th St.	73104-4602
Service Center Building	1100 N. Lindsay	73104-5499
Stanton L. Young Biomedical Research Center	975 N.E. 10 th St.	73104
Steam and Chilled Water Plant	801 N.E. 8 th St.	73104-5807

Student Center	1106 N. Stonewall	73117
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Tulsa Sheridan Campus

Activity Center Tulsa	2821 S. Sheridan Rd.	74129
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Justice Center	2829 S. Sheridan Rd.	74129
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Pediatric Academic Building	2825 S. Sheridan Rd.	74129
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Roger C. Good Ambulatory Center	2815 S. Sheridan Rd.	74129
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Tulsa Schusterman Campus

Academic Center (Bldg. 1)	4502 E. 41 St.	74135
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Central Plant (Bldg. 2 Boiler House)	4502 E. 41 St.	74135
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Physical Plant Support (Bldg. 3)	4502 E. 41 St.	74135
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Conference Center (Bldg. 4)	4502 E. 41 St.	74135
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Academic Support Center (Bldg. 4W)	4502 E. 41 St.	74135
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Building 5	4502 E. 41 St.	74135
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Operations/Ship&Receive (Bldg. 6)	4502 E. 41 St.	74135
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Paint Shop (Bldg. 7)	4502 E. 41 St.	74135
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Storage One (Bldg. 8)	4502 E. 41 St.	74135
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Storage Two (Bldg. 9)	4502 E. 41 St.	74135
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Storage Three (Bldg. 10)	4502 E. 41 St.	74135
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Plumbing/Electrical Shop (Bldg. 11)	4502 E. 41 St.	74135
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Office Building (Bldg. 12)	4502 E. 41 St.	74135
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Auxiliary Plant (Bldg. 14)	4502 E. 41 St.	74135
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Vehicle Storage (Bldg. 15)	4502 E. 41 St.	74135
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Landscaping (Bldg. 17)	4502 E. 41 St.	74135
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APPENDIX B
FORMS

**The University of Oklahoma Health Sciences Center
The University of Oklahoma - Tulsa
ASBESTOS TROUBLE REPORT**

Description of Activity to be Performed: _____

Sample #/Description	Results	Removal Required?	YES NO
_____	_____	Quantity: _____	
_____	_____	Removal Method: _____	
_____	_____	Repair Required?	YES NO
_____	_____	Repair Method:	<input type="checkbox"/> Encapsulation
			<input type="checkbox"/> Other _____

EQUIPMENT/PREVENTIVE MEASURES REQUIRED

- | | | | |
|--|---|--|--|
| <input type="checkbox"/> Evacuate and Isolate Immediate Area | <input type="checkbox"/> Respirators
__ Half-face
__ Fullface | <input type="checkbox"/> Decontamination
__ Portable Shower
__ Double Suit Method
__ Shower Location: _____ | <input type="checkbox"/> Disposal Bags |
| <input type="checkbox"/> Post Signs | <input type="checkbox"/> Encapsulant
__ Bridging
__ Penetrating | <input type="checkbox"/> Amended Water | <input type="checkbox"/> Pressure Differential Equipment |
| <input type="checkbox"/> Barrier Tape | <input type="checkbox"/> Tyvek Suits | <input type="checkbox"/> HEPA Vacuum | <input type="checkbox"/> Glovebag |
| <input type="checkbox"/> Isolate Air Handlers | <input type="checkbox"/> Ground Fault Interrupters | <input type="checkbox"/> Fire Extinguisher | <input type="checkbox"/> Before and After Photos |
| <input type="checkbox"/> Isolate Electric Systems | | | <input type="checkbox"/> Mini-enclosure |

Tools and Repair Materials-List All: _____

Staff Assigned: _____

Samples Required	Name	Duties	#	#
_____	_____	<u>Air Monitoring</u>	<input type="checkbox"/> Background _____	<input type="checkbox"/> Air Exhaust _____
_____	_____	<u>O&M</u>	<input type="checkbox"/> Work Area _____	<input type="checkbox"/> Outside Area _____
_____	_____	<u>O&M</u>	<input type="checkbox"/> Personals _____	<input type="checkbox"/> Clearance _____
_____	_____		<input type="checkbox"/> Other (Detail) _____	_____

Comments: _____

APM Signature: _____ Date: _____
 O & M Supervisor Signature: _____ Date: _____

**OUHSC/OU-TULSA
SMALL-SCALE O&M ACTIVITY REPORT**

Building: _____ Date: ____/____/____ Location: _____ Time: _____ start _____ stop _____
MAINTENANCE ACTIVITY

Description of Activity: _____

ACM Removed: YES NO Removal Method: _____ Quantity: _____

Disposal/Storage Site: _____

Address: _____ Site Lead: _____ Lead Signature: _____

EQUIPMENT/PREVENTIVE MEASURES REQUIRED

- | | | | |
|--|---|---|--|
| <input type="checkbox"/> Evacuate and Isolate Immediate Area | <input type="checkbox"/> Respirators
__Half-face
__Fullface | <input type="checkbox"/> Decontamination
__Portable Shower
__Double Suit Method
__Shower Location: _____ | <input type="checkbox"/> Disposal Bags |
| <input type="checkbox"/> Post Signs | <input type="checkbox"/> Encapsulant
__Bridging
__Penetrating | | <input type="checkbox"/> Pressure Differential Equipment |
| <input type="checkbox"/> Barrier Tape | | | <input type="checkbox"/> Glovebag |
| <input type="checkbox"/> Isolate Air Handlers | <input type="checkbox"/> Tyvek Suits | <input type="checkbox"/> Amended Water | <input type="checkbox"/> Before and After Photos |
| <input type="checkbox"/> Isolate Electric Systems | <input type="checkbox"/> Ground Fault Interrupters | <input type="checkbox"/> HEPA Vacuum | <input type="checkbox"/> Mini-enclosure |
| | | <input type="checkbox"/> Fire Extinguisher | |

Tools and Repair Materials-List All: _____

Staff Assigned Name	Duties	Samples Required	
		#	#
_____	<u>Air Monitoring</u> _____	<input type="checkbox"/> Background _____	<input type="checkbox"/> Air Exhaust _____
_____	<u>O&M</u> _____	<input type="checkbox"/> Work Area _____	<input type="checkbox"/> Outside Area _____
_____	<u>O&M</u> _____	<input type="checkbox"/> Personals _____	<input type="checkbox"/> Clearance _____
_____	_____	<input type="checkbox"/> Other (Detail) _____	_____

Comments: _____

O & M Supervisor Signature: _____ Date: _____

