Miami University's

Asbestos Operations & Maintenance Program

Administered by

E*NVIRONMENTAL* ***H****EALTH AND* ***S****AFETY* ***O****FFICES*

529-2829

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Purpose

The principal objective of the Asbestos Operations and Maintenance Program is to minimize the exposure of building occupants, maintenance, and custodial personnel to airborne asbestos fibers by:

1. The survey, inventory and periodic reassessment of all suspect and known asbestos-containing materials (ACM). The purpose of the reassessment is to monitor the condition of ACM to ensure that ACM is maintained in an undamaged (non-hazardous) condition.

2. Ensuring that asbestos fibers that have been previously released are properly cleaned-up.

3. Training individuals who may encounter ACM during their normal work activities.

4. Developing work practices and procedures that will allow renovation, construction or emergency maintenance to be performed safely without exposing employees, building occupants, or members of the public to airborne asbestos fibers

This program has been designed to comply with applicable state and federal regulations pertaining to asbestos. This program shall remain in force until all ACM has been removed from all university properties.

Background information on asbestos and the health effects related to asbestos exposure is available through the Environmental Health and Safety Offices's (EHSO). Interested persons may request this information by contacting EHSO at 529-2829.

Abbreviations

The following abbreviations appear in this program:

25/10	25 linear feet/10 square feet of TSI or SurfMat
ACM	Asbestos-Containing Material
CIH	Certified Industrial Hygienist
EHSO	Environmental Health and Safety Offices
EXLimit	Excursion Limit
f/cc	fibers per cubic centimeter
HEPA	High-Efficiency Particulate Air
MSHA	Mine Safety and Health Administration
NIOSH	National Institute of Occupational Safety and Health
NEA	Negative Exposure Assessment
NegPres	Negative Pressure
NPEncl	Negative Pressure Enclosure systems
NPResp	Negative Pressure Respirator
PACM	Presumed Asbestos-Containing Material
PEL(S)	Permissible Exposure Limit(s)
PERRAC	Public Employment Risk Reduction Advisory Commission
PFD	Physical Facilities Department
SCBA	Self-Contained Breathing Apparatus
SurfMat	Surfacing material
TSI	Thermal System Insulation
TWA	Time-Weighted Average

References

This program was developed in accordance with the Ohio Public Employment Risk Reduction Act and is adopted from the following:

State of Ohio Department of Health. Ohio Administrative Code, Chapter 3701-34, "Asbestos Hazard Abatement Rules."

United States Department of Labor. Occupational Safety and Health Administration. Code of Federal Regulations, Chapter 29, Part 1910, Section 1001, "Asbestos."

United States Department of Labor. Occupational Safety and Health Administration. Code of Federal Regulations, Chapter 29, Part 1926, Section 1101, "Asbestos."

United States Environmental Protection Agency. Code of Federal Regulations, Chapter 40, Part 763, "Asbestos-Containing Materials in Schools."

Program accessibility

This program is required to be made readily accessible to employees through posting, inserting in a departmental procedures manual, or by providing photocopies to departments upon request. The master copy shall be on file in EHSO.

Program updates

The Environmental Health and Safety Offices will review and update this program whenever a review of work operations indicates that the Asbestos Program may no longer adequately protect employees. Only EHSO may add, delete, or modify any provisions in this program. Requests for changes in the program may be submitted in writing to EHSO.

Program responsibilities

All policies, provisions, and procedures listed in this program are the responsibility of Miami University. Employees are required to comply with all aspects of this program. Any employee who willfully violates or disregards provisions of this program will be subject to disciplinary action as specified by University policy.

Contractor

A contractor who willfully violates or disregards provisions of Miami University's program as they relate to applicable State and Federal regulations will be subject to penalties up to and including removal from the job and/or loss of contract in accordance with the provisions of the contract.

Asbestos Abatement Coordinator

- Responds to PFD work orders where ACM may be disturbed.
- Coordinates/conducts abatement activities.
- Maintains asbestos-related PFD work orders.
- Maintains records of personnel, personal samples, logs, and other documents required when in-house abatement is conducted.

Industrial Hygienist

- Coordinates/conducts assessments and collection of PACM samples.
- Determines appropriate response actions based on condition of ACM or PACM.
- Develops/coordinates written project specifications.
- Maintains master library of Miami University's Asbestos Inspection Reports.
- Addresses inquiries relating to potential exposure of building occupants based on condition of ACM.

Asbestos removal specifications

OAC 3701-34

Procedures for asbestos abatement shall be addressed in asbestos abatement project specifications. Other removal projects are considered unique; therefore, specifications shall be requested through EHSO.

Identifying ACM

1926.1101(k)(2)

Consult Asbestos Inspection Reports, which are available in the following locations:

- EHSO web site [http://www.ehs.muohio.edu]
- Environmental Health and Safety Offices (55 Hughes Hall, during normal business hours)
- Physical Facilities Service Desk (Cole Service Building)
- Housing, Dining, and Guest Services - *Residence Halls only* (Cook Place)
- Telecommunications (Robertson Hall)

Response Action Factors

Asbestos building inspection data denotes the current condition of the sampled material at the inspection date and the potential for fiber release. The objective of the assessment was to organize and evaluate pertinent information about the asbestos-containing material in an effort to determine present and future exposure hazards. The assessment process was used to perform a subjective evaluation of suspect materials with regard to six factors. The first three individual factors focus on the current condition of the asbestos-containing material. Evidence of deterioration, delamination, physical damage, or water damage indicates that fiber release has occurred, is occurring, or is likely to occur in the future. Such evidence is based on the appearance of the material and the presence of dislodged or crumbled material on the floor or other horizontal surfaces. Factors under the second heading reflect the potential for fiber release due to disturbance or erosion. Surface erosion is likely to occur when asbestos-containing materials are located in air plenums or near forced-air streams. Exposed and easily accessible material in areas frequented by building occupants, or subject to mechanical vibrations are more vulnerable to disturbance or damage than materials in other locations.

Table 1 Factors For Assessing Potential Fiber Release

1. Current Condition of ACM
   - Evidence of deterioration or delamination from the underlying surface (substrate)
   - Evidence of physical damage (e.g., presence of debris)
   - Evidence of water damage

2. Potential for Future Disturbance, Damage, or Erosion of ACM
   - Proximity to air plenum or direct airstream
   - Visibility, accessibility (to building occupants and maintenance personnel), and degree of activity (air movement, vibration, movement of building occupants)
   - Change in building use

Possible conditions of friable asbestos-containing building material include “Poor,” “Fair,” and “Good,” with hazard ranks from 1 to 7 (i.e., 1 being good, 7 being poor). Non-friable materials are categorized as non-friable category I (packing, gaskets, resilient floor coverings, mastic, and asphalt roofing products) or category II (plasters, drywall tape/mud, cement or board products). If any material is determined to be in poor condition and is assigned a hazard rank of 7, immediate action is recommended. However, for the remaining six hazard categories, the potential for disturbance is considered. The hazard ranks generated from the assessment categories were used to determine the appropriate response actions.

Table 2 Classifications for Hazard Potential

Hazard Rank	ACM Condition	Potential
7	Poor	Any
6	Fair	High
5	Fair	Moderate
4	Fair	Low
3	Good	High
2	Good	Moderate
1	Good	Low

Table 3 Response Actions

Condition	Hazard Rank	Response
Good	1 - 3	Implement an Operation and Maintenance plan
Fair	4 - 6	Repair material (if feasible) Implement an Operation and Maintenance plan
Poor	7	Removed damaged material using a Certified Asbestos Abatement Contractor

1926.1101(f)

Exposure Monitoring

Initial exposure monitoring

1926.1101(c)(1)-(2)
- 8-Hour TWA = 0.1 f/cc per job or task
- EXLimit = 1 f/cc averaged over 30-minute sampling period

1926.1101(f)(1)(i)(ii)
- Required for reasonable exposure at or above the TWA PEL or EXLimit.

Periodic exposure monitoring

1926.1101(f)(3)
Following initial monitoring, samples shall be gathered at a frequency determined by the Industrial Hygienist. Sampling shall be done at least every 6 months for employees whose exposures may reasonably be foreseen to *exceed* the TWA PEL or EXLimit.

Changes in exposure monitoring frequency

1926.1101(f)(4)(ii)
Monitoring shall be instituted whenever there has been a change in the process, control equipment, personnel, or work practices that may result in new or additional exposures above the TWA PEL or EXLimit or when there is any reason to suspect that a change may result in new or additional exposures above the PEL or EXLimit.

1926.1101(f)(4)(i)
The Industrial Hygienist may discontinue monitoring if initial or periodic monitoring statistically indicates that employee exposures are below the TWA PEL or EXLimit.

Exposure monitoring procedure

All samples must be sent via EHSO to an accredited laboratory for analysis. Refer to the sampling procedures outlined in 29 CFR 1910.1001 appendix A.

Observation of exposure monitoring

1926.1101(f)(6)
Affected employees and/or designated representatives are permitted by law to observe air monitoring.

Results

1926.1101(f)(5)(i)(iii)
Monitoring results shall be made available to affected employees within 15 working days of receipt. If the TWA or EXLimit was exceeded, the results shall include the corrective action being taken to reduce employee exposure to or below the TWA or EXLimit. Results shall be available from EHSO upon request.

1926.1101(f)(2)(iii)
Negative exposure assessment

Employee exposure shall be demonstrated to be less than the PEL by one of the following methods:
- objective data
- prior asbestos monitoring data
- results of initial exposure monitoring

1926.1101(d)

Multi-Employer Worksites

Responsibility to ensure employee safety

1926.1101(d)(3)-(4)

All employers of employees exposed to asbestos hazards must comply with applicable protective provisions to protect their employees. All employers of employees working *adjacent to regulated areas established by another employer on a multi-employer work-site*, must take steps on a daily basis to ascertain the integrity of the enclosure and/or the effectiveness of the control method relied on by the primary asbestos contractor to assure that asbestos fibers do not migrate to such adjacent areas.

General contractors

1926.1101(d)(5)

General contractors on a construction project that includes work covered by this program shall exercise general supervisory authority over the work covered by this program, even though the general contractor is not qualified to serve as the asbestos "competent person." As supervisor of the entire project, the general contractor shall ascertain whether the asbestos abatement contractor is in compliance with the asbestos standard and shall require such contractor to come into compliance with the standard when necessary.

1926.1101(d)(1)

Hazard communication responsibility

On multi-employer worksites, the employer performing work requiring a regulated area must inform other employers on the site of (1) the nature of the work with asbestos and/or PACM, (2) the existence of and requirements pertaining to regulated areas, and (3) the measures taken to ensure that employees of other employers are not exposed to asbestos.

Abatement responsibility

1926.1101(d)(2)

Asbestos hazards at a multi-employer work site shall be abated by the contractor who created or controls the source of asbestos contamination unless otherwise noted by the Asbestos Abatement Coordinator.

1926.1101(e)

Engineering controls and work practices

Regulated Areas

1926.1101(e)

Regulated areas are required wherever airborne concentrations of asbestos and/or PACM are in excess of the TWA or EXLimit.

All Operations

The following engineering and work practice controls are **mandatory** for all asbestos operations:

- HEPA vacuuming
- wet methods when feasible
- prompt cleanup/disposal of debris in leak-tight containers
- ventilation w/HEPA filtration
- enclosure/isolation
- ventilation of regulated area
- work area restrictions
- access limited to authorized personnel only

The following engineering and work practice controls are **prohibited** for all asbestos operations:

- high-speed abrasive equipment
- compressed air w/o exhaust containment
- dry sweeping
- employee rotation as a means of reducing a PEL

Table 4 General Asbestos Removal Operations

	OSHA work classification			
	Class 1	Class 2	Class 3	Class 4
Examples of abatement actions	TSI and SurfMat removal	Removal of all other asbestos not TSI or SurfMat	All disturbances of ACM (60" bag active disturbance limit)	Housekeeping (includes construction site cleanup)
Signs required?	Yes	Yes	Yes	Yes
Competent Person necessary?	CAS	CAS	O&M	O&M
Regular inspections?	Yes	Yes	Yes	Yes
Circumstances requiring containment	> 25/10 sq/lf < 25/10 required if no NEA or adjacent workers	if no NEA if likely > PEL if not intact removal	if no NEA or > PEL	None
Containment/isolation method	Critical barriers/isolation HVAC isolation	Critical barriers/isolation (indoor work only) Intact removal if possible	Critical barriers/drop cloth Local HEPA exhaust	None
Drop cloths necessary?	Yes	Yes	If TSI/SurfMat and drilling, cutting, sanding, abrading, chipping, sawing	No
Local exhaust required?	if no NEA or > PEL	if > PEL • local HEPA exhaust • process isolation • other work practices • engineering control/supplied air respirators	No	No
Water spray process required?	Yes	Yes	N/A	N/A
LOTO required	Yes	Yes	Yes	Yes

Table 5 Full containment systems

	OSHA work classification			
	Class 1	Class 2	Class 3	Class 4
Regulated Area necessary?	Yes	Yes	Yes	N/A
NPEncl: 4 air changes/hr -0.02" H_2O gauge negative PSI thru directed air smoke test power lockout [GFCI]	Yes	Yes	may use Class 1 methods	
smoke test?	Yes	Yes	N/A	
pre-cleaning				
critical barriers				
local exhaust required?				
3-Stage decontamination system	Yes			
HVAC isolation				
Circumstances requiring hygiene facility	> 25/10 sq/lf < 25/10 required if no NEA or adjacent workers	if no NEA if likely > PEL if not intact removal	if no NEA or > PEL	None

Table 6 Mini-enclosure systems

	OSHA work classification			
	Class 1	Class 2	Class 3	Class 4
Mini-enclosure required?	Yes	Yes	Yes	N/A
Holds ≤ 2 people?	Yes	Yes	If TSI or SurfMat and is drilled, cut, abraded, sanded, sawed, chipped	
6 mil plastic?	Yes	Yes	N/A	
NP required?	Yes	Yes		
Seal holes?	Yes	Yes	method same as Class 1 procedure	
smoke test?	Yes	Yes	N/A	
clean before reuse?	Yes	Yes		
directed ventilation?	Yes	Yes		

Table 7 Glove Bag Systems

	OSHA work classification			
	Class 1	Class 2	Class 3	Class 4
Glove bag required?	Yes	Yes	Yes	N/A
6 mil seamless?	Yes	Yes	If TSI or SurfMat and is drilled, cut, abraded, sanded, sawed, chipped	
Covers completely?	Yes	Yes	N/A	
Smoke test?	Yes	Yes		
1 use, no moving?	Yes	Yes		
< 150°F surface?	Yes	Yes		
HEPA collapse before disposal?	Yes	Yes		
Pre-removal pipe wrap?	w/2x 6-mil	Yes		
Attached waste bag integrated?	Yes	Yes	method same as class 1 procedure	
sliding valve separation?	Yes	Yes	N/A	
Number of persons	2	1	1	

Table 8 Negative Pressure Glove Bag Systems for Pipe Runs

	OSHA work classification			
	Class 1	Class 2	Class 3	Class 4
NP glove bag required for pipe runs?	Yes	Yes	Yes	N/A
Attached HEPA?	Yes	Yes	If TSI or SurfMat and is drilled, cut, abraded, sanded, sawed, chipped (method same as class 1 procedure)	
GB work practices the same?	Yes	Yes	N/A	
Separate waste bag reuse?	Yes	Yes		
Number of persons	2	1	1	

Table 9 Negative Pressure Glove Box Systems

	OSHA work classification			
	Class 1	Class 2	Class 3	Class 4
NegPres Glove Box required?	Yes	Yes	Yes	N/A
Rigid construction	Yes	Yes	if TSI or SurfMat and is drilled, cut, abraded, sanded, sawed, chipped	
Negative pressure generator	Yes	Yes	N/A	
Air filter unit attached	Yes	Yes		
ACM outlet	Yes	Yes	method same as Class 1	
Backup generator	on-site	Yes	N/A	
6 mil waste bags	Yes	Yes		
Number of persons	2	1	1	
Smoke tested	Yes	Yes	N/A	
Pre-removal pipe wrap	Yes	Yes		
HEPA filtration	Yes	Yes		

Table 10 Alternate control methods

	OSHA work classification			
	Class 1	Class 2	Class 3	Class 4
Alternate control methods permitted?	If > 25/10 feet	Yes	N/A	N/A
Isolate from breathing zone?	Yes	N/A		
Certified < PEL	CIH/PE-pd	Competent Person		
Perimeter monitoring?	< 0.01 f/cc	No		
Worse case monitoring?	Yes	Yes		
PERRC notification?	Yes	N/A		

Respiratory Protection

Respiratory protection is required in work operations where an employee may be exposed in excess of the TWA or EXLimit. Employees needing to wear respirators must meet eligibility requirements, which are specified in Miami University's Respiratory Protection Program. Contact EHSO for more information.

1926.1101(h)(1){i-viii}
1926.1101(h)(3)-(4)

Table 11 Respiratory protection required

	OSHA work classification			
	Class 1	Class 2	Class 3	Class 4
All work operations	Yes	No	No	No
In emergencies	Yes	Yes	Yes	Yes
Employees exposed above TWA or EXLimit	Yes	Yes	Yes	Yes
NEA not produced		Yes	Yes	
Work not performed using wet methods (1)		Yes	Yes	
TSI or surfacing ACM or PACM is disturbed			Yes	
Within regulated areas	Yes	Yes	Yes	Yes

1926.1101(h)(2)(iv) [1] *Half-mask air purifying other than disposable equipped with high-efficiency filters*

1926.1101(h)(2) & Table 1

Airborne concentrations of asbestos or conditions of use	**Required respirator**
Not in excess of 1 f/cc (10 x PEL)	Half-mask air purifying respirator other than a disposable respirator, equipped with a high efficiency filter.
Not in excess of 5 f/cc (50 X PEL)	Full facepiece air-purifying respirator equipped with high efficiency filters.
Not in excess of 10 f/cc (100 X PEL)	Any powered air-purifying respirator equipped with high efficiency filters or any supplied air respirator operated in continuous flow mode.
Not in excess of 100 f/cc (1000 X PEL)	Full facepiece supplied air respirator operated in pressure demand mode.
Greater than 100 f/cc (1000 X PEL) or unknown concentration.	Full facepiece supplied air respirator operated in pressure demand mode, equipped with an auxiliary positive pressure self-contained breathing apparatus.
Class 1 work	Tight-fitting powered air-purifying respirator equipped with high efficiency filters (or a full facepiece supplied air respirator operated in the pressure demand mode equipped with HEPA egress cartridges or an auxiliary positive pressure self-contained breathing apparatus) for all employees within the regulated area where Class I work is being performed for which a NEA has not been produced and, the exposure assessment indicates the exposure level will not exceed 1 f/cc as an 8-hour TWA. Provide a full facepiece supplied air respirator operated in the pressure demand mode equipped with an auxiliary positive pressure SCBA under such conditions, if the exposure assessment indicates exposure levels above 1 f/cc as an 8-hour TWA.

1926.1101(h)(2)(iv){v}

Notes

1926.1101(h)(2) Table 1 Note: (a)

- Respirators assigned for high environmental concentrations may be used at lower concentrations or when required respirator use is independent of concentration.
- Employee may opt to use a tight-fitting, powered, air-purifying respirator in lieu of any negative-pressure respirator provided it affords adequate protection.

1926.1101(h)(2)(iii)(A)

Protective Clothing and Equipment

1926.1101(i)(1-4)

Table 12 Protective Clothing and Equipment

	Specifications		
Definition	Includes such items as coveralls or similar whole-body clothing, head coverings, gloves, foot coverings, face shields, vented goggles, or other appropriate protective equipment which complies with 29 CFR 1910.133.		
Provision	if exposure is above the TWA or EXLimit	if possibility of eye irritation exists	Provide clean clothing and equipment at least weekly
Instances required	exposure to airborne concentrations of asbestos that exceeds the TWA or EXLimit	a required NEA not produced	Class 1 operations involving removal of > 25/10 TSI or surfacing ACM and PACM
Maintenance schedule	clean, launder, repair, or replace as necessary to maintain effectiveness	immediately mend or replace worksuit if rips or tears detected	The competent person shall examine worksuits worn by employees at least once per workshift for rips or tears that may occur during performance of work.
Handling	Launder in a way that prevents the release of airborne fibers of asbestos in excess of the PEL	DO NOT attempt to remove asbestos by blowing or shaking	DO NOT take contaminated work clothing out of the change room, except those employees authorized to do so for the purpose of laundering, maintenance, or disposal.
Transporting	In sealed impermeable bags, or other closed, impermeable containers		
Hazard communication	Inform laundering personnel of the handling precautions and of the potentially harmful effects of exposure to asbestos	Label appropriately	

Hygiene Facilities and Practices

1926.1101(j)(1-2)

Table 13 Hygiene Facilities and Practices

	OSHA work classification			
	Class 1	Class 2	Class 3	Class 4 †
Drop cloths?		Yes	Yes	
Decontamination area (equipment room, shower, clean room)?	Yes	N/A	N/A	N/A
Lunch area?	Yes			
No smoking	Yes	Yes	Yes	Yes
HEPA-vacuum clothing and equipment?	Yes	Yes	Yes	N/A

† *Employees shall follow same class requirements as applicable to employees working in the regulated area.*

1926.1101(k)(2)

Hazard Communication

Specific information given to types of building occupants will vary depending on the likelihood that ACM will be disturbed through occupants' normal work activities.

1926.1101(k)(2)(ii)

Miami University shall disclose information concerning the presence, location and quantity of ACM/PACM:

1. To prospective employers applying or bidding for work whose employees reasonably can be expected to work in or adjacent to areas containing such material.

1910.1001(j)(2)(i)

2. To Miami University employees who will work in or adjacent to areas containing such material.

1926.1101(k)(3)

3. On multi-employer worksites, to all employers of employees who will be performing work within or adjacent to areas containing such materials.
4. To Tenants who will occupy areas containing such material.

1926.1101(k)(3)(iii)

5. Within 10 days of work involving such materials, to persons listed in numbers 2-4 above of any remaining material in the area and final monitoring results, if any.

1926.1101(4)

6. Within 24 hours if its existence was previously unknown, to persons listed in numbers 2-4 above.

1926.1101(k)(5)

At any time, Miami University may demonstrate that PACM does not contain asbestos through methods prescribed in the asbestos regulations.

1926.1101(k)(6-8)

Asbestos warning signs and labels that comply with 29 CFR 1910.1200(f) shall be posted as appropriate so employees can clearly identify what building materials are ACM/PACM. Such signs and labels shall bear the following information:

1910.1001(j)(3)(v)

Warning signs shall be posted at the entrances to mechanical rooms/areas in which employees reasonably can be expected to enter and which contain ACM/PACM.

Training

1926.1101(k)(9)

Table 14 Training requirements

Training Requirements				
Class/Work	**Length or Type**	**Initial and Annual**	**Curriculum**	**PERR Reference**
Class 1		Yes	EPA MAP 40 CFR 763 subpart E appx C	1926.1101 (k)(9)(iii)
Class 2 requiring critical barriers/isolation and/or NPEncl		Yes	EPA MAP 40 CFR 763 subpart E appx C	1926.1101 (k)(9)(iii)
Class 2 ACM roofing, flooring, siding, ceiling tiles, transite	8 hours; hands-on	Yes	1926.1101(k)(9)(viii) and engineering/work practice controls for Class 2 work [1926.1101(g)]	1926.1101 (k)(9)(iv)(A)
Class 2 multiple material categories		Yes	1926.1101(k)(9)(viii) and engineering/work practice controls for Class 2 work applicable to each category of material and removal methods [see1926.1101(g)]	1926.1101 (k)(9)(iv)(B)
Class 2 non-specified materials	hands-on	Yes	(k)(9)(viii) and specific engineering/work practices relating to category of material removed and removal methods	1926.1101 (k)(9)(iv)(C)
Class 3	16 hours; hands-on	Yes	EPA 40 CFR 763.92(a)(2)	1926.1101 (k)(9)(v)
Class 3 material-specific (as determined by Competent Person)	16 hours; hands-on; relating to material	Yes	(k)(9)(viii); (g) applicable	1926.1101 (k)(9)(iv)(B)
Class 4	2 hours	Yes	EPA 40 CFR 763.92(a)(1)	1926.1101 (k)(9)(vi)
Housekeeping	2 hours	Yes	Awareness training for housekeeping workers	1910.1001(j)(7)(iv) and 1910.1001(k)
Anticipated exposure > PEL and not otherwise covered by Class 1 - 4 work		Yes	(k)(9)(viii)	1926.1101 (k)(9)(vii)

Medical Surveillance Program

A medical examination shall be required of an employee who, for a combined total of 30+ days per year, is engaged in Class 1, 2, or 3 work or is exposed at or above the PEL for a combined 30 days or more per year. Such examination shall be provided periodically or more often as indicated by an examining physician.

Pre-placement medical examinations

A pre-placement medical examination shall be provided to an eligible employee before he or she is assigned to a job task or position that may expose him or her to airborne concentrations of asbestos fibers at or above the TWA or EXLimit.

Termination of employment medical examination

A termination of employment medical examination shall required of any employee who has been exposed to airborne concentrations of fibers of asbestos at or above the TWA or EXLimit. Such medical examination must be conducted within 30 calendar days before or after the date of termination of employment.

Physician's Written Opinion

Following any medical examination conducted pursuant to this program, EHSO shall obtain and provide to the affected employee within 30 days from its receipt, a written opinion from the examining physician that contains the information specified in 29 CFR 1926.1001.

Exemptions from medical examinations

An employees may be exempt from a medical examination if adequate records show that the employee has been examined in accordance with the medical examination requirements outlined in the asbestos standard within the past one (1) year period.

Recordkeeping

Unless specified otherwise, the following records shall be coordinated through EHSO:

1. Objective data records.
2. Exposure measurement records.
3. Medical surveillance records.
4. Training records.
5. Data to Rebut PACM.

The following information is available for review during normal business hours in EHSO:

1926.1101(k)(10)

- Asbestos standard and its appendices.
- Self-help smoking cessation program material.
- Medical records.†*
- Exposure records.*

* Written request required; allow 3 business days for processing.
† Employee's written consent required; allow 3 business days for processing.

Definitions

The following terms appear in this program:

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

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

Asbestos hazard abatement specialist: a person with responsibility for the oversight or supervision of asbestos hazard abatement activities including, asbestos hazard abatement project managers, hazard abatement project supervisors and foremen, and employees of school districts or other governmental or public entities who coordinate or directly supervise or oversee asbestos hazard abatement activities performed by school district, governmental, or other public employees in a school district, governmental, or other public buildings.

Asbestos hazard evaluation specialist: a person responsible for the identification, detection, and assessment of asbestos-containing materials, the determination of appropriate response actions, or the preparation of asbestos management plan for the purpose of protecting the public health from the hazards associated with exposure to asbestos, including the performance of air and bulk sampling. This category of specialists includes management planners, health professionals, industrial hygienists, private consultants, or other individuals involved in asbestos risk identification or assessment or regulatory activities.

Asbestos hazard abatement activity: any activity involving the removal, renovation, enclosure, repair, or encapsulation of reasonable related friable asbestos-containing materials in an amount greater than fifty linear feet or fifty square feet. Asbestos hazard abatement activity also includes any such activity involving such asbestos-containing materials in an amount of fifty linear or fifty square feet or less if, when combined with any other reasonably related activity in terms of time and location of the activity, the total amount is in an amount greater than fifty linear or fifty square feet.

Asbestos hazard abatement project designer: the person responsible for the determination of the work scope, work sequence, or performance standards for an asbestos hazard abatement activity, including preparation of specifications, plans, and contract documents.

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

Asbestos-containing material (ACM): any material containing more than 1% asbestos.

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

Certified Industrial Hygienist (CIH): one certified in the practice of industrial hygiene by the American Board of Industrial Hygiene.

Change room: See “Equipment Room.”

Class I asbestos work: activities involving the removal of TSI and surfacing ACM and PACM.

Class II asbestos work: activities involving the removal of ACM which is not thermal system insulation or SurfMat. This includes, but is not limited to, the removal of asbestos-containing wallboard, floor tile and sheeting, roofing and siding shingles, and construction mastics.

Class III asbestos work: repair and maintenance operations, where ACM, including TSI and surfacing ACM and PACM, is likely to be disturbed.

Class IV asbestos work: maintenance and custodial activities during which employees contact but do not disturb ACM or PACM and activities to clean up dust, waste and debris resulting from Class I, II, and III activities.

Clean room: an uncontaminated non-smoking room having facilities for the storage of employees' street clothing and uncontaminated materials and equipment.

Closely resemble: that the major workplace conditions which have contributed to the levels of historic asbestos exposure, are no more protective than conditions of the current workplace.

Competent person : in addition to the definition in 29 CFR 1926.32 (f), one who is capable of identifying existing asbestos hazards in the workplace and selecting the appropriate control strategy for asbestos exposure, who has the authority to take prompt corrective measures to eliminate them, as specified in 29 CFR 1926.32(f): in addition, for Class I and Class II work who is specially trained in a training course which meets the criteria of EPA's Model Accreditation Program (40 CFR 763) for supervisor, or its equivalent and, for Class III and Class IV work, who is trained in a manner consistent with EPA requirements for training of local education agency maintenance and custodial staff as set forth at 40 CFR 763.92 (a)(2).

Construction work: work for construction, alteration, and/or repair, including painting and decorating.

Critical barrier: one or more layers of plastic sealed over all openings into a work area or any other similarly placed physical barrier sufficient to prevent airborne asbestos in a work area from migrating to an adjacent area.

Decontamination area: an enclosed area adjacent and connected to the regulated area and consisting of an equipment room, shower area, and clean room, which is used for the decontamination of workers, materials, and equipment that are contaminated with asbestos.

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

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

Employee exposure: that exposure to airborne asbestos that would occur if the employee were not using respiratory protective equipment.

Equipment room (change room): a contaminated room located within the decontamination area that is supplied with impermeable bags or containers for the disposal of contaminated protective clothing and equipment.

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

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

High-efficiency particulate air filter: a filter capable of trapping and retaining at least 99.97 percent of 0.3 micrometer diameter mono-disperse particles.

Homogeneous area: an area of SurfMat or thermal system insulation that is uniform in color and texture.

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

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

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

Modification: a changed or altered procedure, material or component of a control system, which replaces a procedure, material or component of a required system. Omitting a procedure or component, or reducing or diminishing the stringency or strength of a material or component of the control system is not a modification for purposes of paragraph (g)(6) of this program.

Negative (Initial) Exposure Assessment: a demonstration by the employer, which complies with the criteria in the "Negative Exposure Assessment" section of this program, that employee exposure during an operation is expected to be consistently below the PELs.

Objective data records: air sampling documentation used to demonstrate that an employee's exposure to asbestos during specific work tasks is below the permissible exposure limit (also called a "negative exposure assessment").

Presumed asbestos containing material (PACM): thermal system insulation and SurfMat found in buildings constructed before 1981.

Project Designer: see "Asbestos hazard abatement project designer."

Regulated area : (1) an area established to demarcate areas where Class I, II, and III asbestos work is conducted, and any adjoining area where debris and waste from such asbestos work accumulate; and a work area within which airborne concentrations of asbestos, exceed or there is a reasonable possibility they may exceed the permissible exposure limit. (2) an area established by the employer to demarcate areas where airborne concentrations of asbestos exceed, or there is a reasonable possibility they may exceed, the permissible exposure limits.

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

Renovation: the modifying of any existing structure, or portion thereof.

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

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

Tenants: for the purposes of this program, a tenant is a person that works or resides in a Miami University structure.

Thermal System Insulation (TSI): ACM applied to pipes, fittings, boilers, breeching, tanks, ducts or other structural components to prevent heat loss or gain which contains more than 1% asbestos.

Time-weighted average (TWA): 1. An employee's average airborne exposure in any 8-hour work shift of a 40-hour work week. 2. Average concentration for a normal 8-hour workday on a 40-hour workweek, to which nearly all workers may be repeatedly exposed, day after day, without adverse effects.

MIAMI UNIVERSITY **OXFORD, OHIO 45056**
Environmental Health and Safety Offices **November 1997**

STANDARD OPERATING PROCEDURE

SUBJECT: Removal of Asbestos-Containing Flooring Material

Purpose and Scope: Asbestos-containing flooring material (floor tile, mastic, vinyl floor covering) can be found in many buildings on campus. OSHA concluded that employee exposures will consistently be below the 8-hour Time Weighted Average and excursion limit during removal of intact flooring material when compliant work practices are followed.

Procedure: Personnel who have completed the eight-hour asbestos training course may remove this material when using the following compliant work practices:

Removal of Sheet Vinyl Floor Covering

- Before removal begins, the entire floor is vacuumed using a high-efficiency particulate air (HEPA) filter vacuum with a metal floor attachment and the flooring material is then wetted.
- The material is sliced with a sharp edged instrument, such as a utility knife, into strips approximately 4 to 8 inches wide.
- Each strip is rolled up tightly from end to end.
- As each strip is rolled up, a constant mist of amended water is sprayed into the point where the material separates from the backing.
- After a strip has been removed, it is placed in a heavy duty impermeable trash bag or other sealable leak-tight container.
- After three strips of flooring material are removed, any residual felt, after being thoroughly wetted, is removed with a stiff-bladed scraper. The felt scrapings are placed while still wet in a heavy duty, impermeable trash bag or other sealable leak-tight container.
- After all flooring has been removed and the entire floor has dried, it is vacuumed using a HEPA vacuum with a metal floor attachment.

Removal of Floor Tiles and Associated Adhesives

- Before removal begins, the entire floor is vacuumed using a HEPA vacuum with a metal floor attachment and tiles are then wetted unless heat is to be used in the removal process.
- Each floor tile is pried up individually using a stiff bladed scraper. If a tile does not release from the adhesive when the scraper is forced under the tile by hand, the scraper may be struck with a hammer to cause the tile to release and/or the tile is heated (e.g. using a hot air gun) to soften the adhesive and facilitate removal.
- Alternatively, without first prying up floor tiles using a scraper, heat is applied to the floor tile from a heat source (e.g. infrared heat machine) and the tiles are removed by hand or by using a scraper.
- After the tile is removed, it is placed in a heavy duty impermeable trash bag or other sealable leak-tight container without further breakage.
- As small areas of floor are cleared of tile, residual adhesive is removed – to the extent necessary to prepare the surface for installation of new flooring material -- by being wetted and scraped using a stiff bladed floor scraper.
- Adhesive residues are placed while still wet in a heavy duty impermeable trash bag or other sealable leak-tight container.
- After all flooring has been removed and the entire floor has dried, it is vacuumed using a HEPA vacuum with a metal floor attachment.

A checklist of common tools used for removal of asbestos-containing flooring material is found on back.

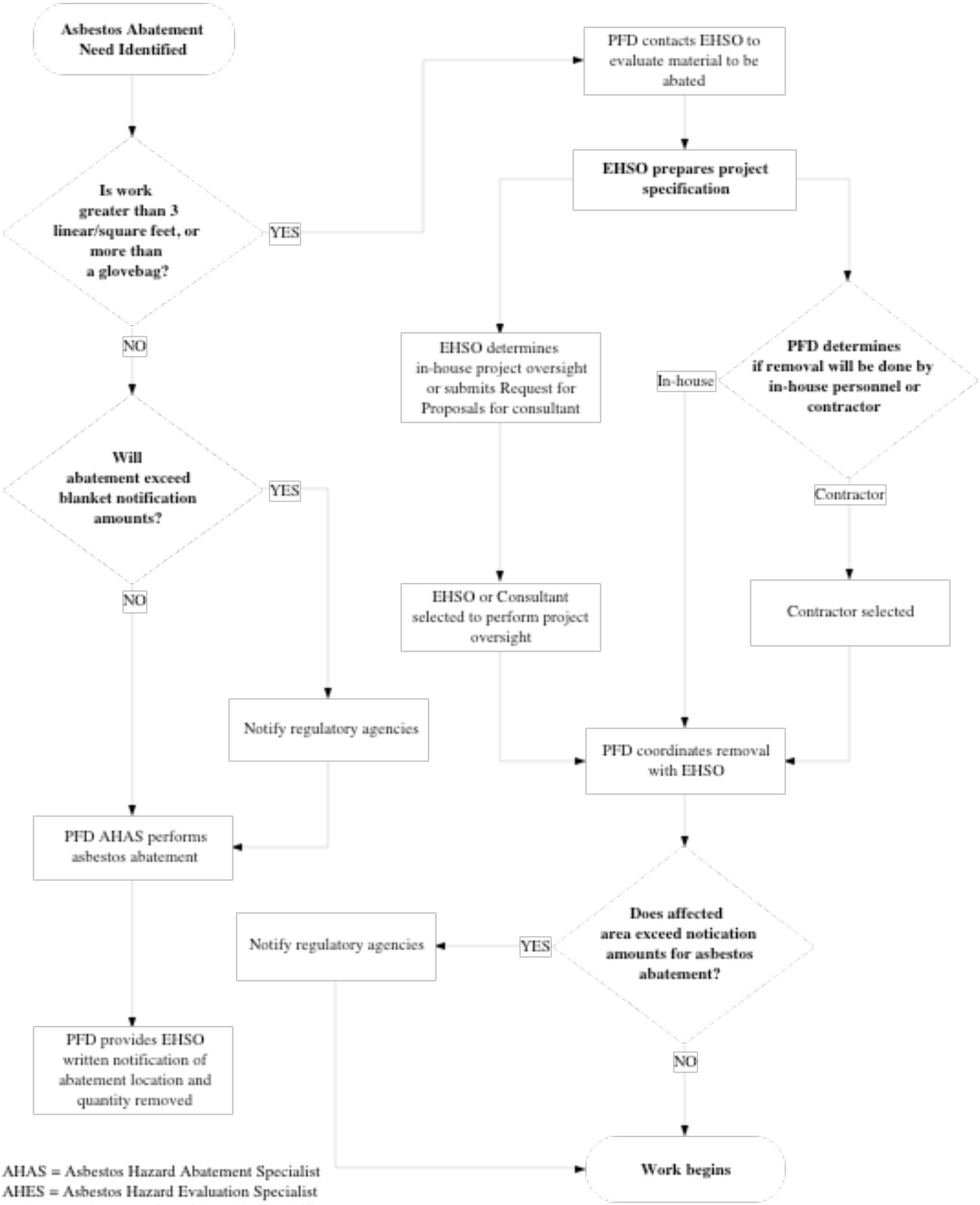
Sheet Vinyl Flooring
Tools and Equipment Checklist

- ☐ Stiff-bladed scraper
- ☐ Utility or hook knife
- ☐ Tape to seal bags
- ☐ Protective clothing (optional)
- ☐ GFCI for vacuum (or other electrical)
- ☐ Wet/Dry HEPA filtered vacuum cleaner
- ☐ Leak-tight containers (6-mil plastic bags, drums, etc.)
- ☐ Wetting agent (dishwashing detergent, commercial surfactant, etc.)
- ☐ Garden sprayer
- ☐ Labels for Bags
- ☐ Plastic sheeting (optional)

Floor Tile and Adhesive
Tools and Equipment Checklist

- ☐ Stiff-bladed scraper
- ☐ Utility or hook knife
- ☐ Tape to seal bags
- ☐ Protective clothing (optional)
- ☐ Hammer
- ☐ GFCI for vacuum (or other electrical)
- ☐ Wet/Dry HEPA filtered vacuum cleaner
- ☐ Leak-tight containers (6-mil plastic bags, drums, etc.)
- ☐ Wetting agent (dishwashing detergent, commercial surfactant, etc.)
- ☐ Garden sprayer
- ☐ Labels for Bags
- ☐ Plastic sheeting (optional)
- ☐ Safety glasses
- ☐ Heat gun (optional)
- ☐ Gloves

Process Overview for Asbestos Abatement



AHAS = Asbestos Hazard Abatement Specialist
AHES = Asbestos Hazard Evaluation Specialist
EHSO = Environmental Health and Safety Offices
PFD = Physical Facilities Department