MILLBURY PUBLIC SCHOOLS

2024
AHERA THREE-YEAR
RE-INSPECTION REPORT
FOR THE
HIGH SCHOOL
12 MARTIN STREET
MILLBURY, MA

UNIVERSAL ENVIRONMENTAL CONSULTANTS
12 Brewster Road
Framingham, MA 01702

TABLE OF CONTENTS

CERTIFIED PERSONNEL INFORMATION

DESIGNATED PERSON INFORMATION

1.0 INTRODUCTION

2.0 SUMMARY

3.0 GLOSSARY OF TERMS

4.0 RESOURCES REQUIRED FOR THE LEA

5.0 RESOURCES REQUIRED TO-COMPLETE RESPONSE ACTIONS

6.0 OBSERVATIONS and RECOMMENDATIONS

7.0 DATES FOR RECOMMENDED RESPONSE ACTIONS

8.0 MATERIALS FOUND NOT TO CONTAIN ASBESTOS

Records Keeping Review

SECTION 1
Local Education Agency (LEA) Designated Person Responsibility

SECTION 2
Asbestos Hazard Emergency Response Act (AHERA) surveillance inspections forms and third year asbestos re-inspection assessment spreadsheets

SECTION 3
Operation and Maintenance Plan.
DLS 454 CMR 28 Regulation.

SECTION 4
Bulk Sampling Reports.

CERTIFIED PERSONNEL INFORMATION

INSPECTOR INFORMATION

INSPECTOR NAME: Jason Becotte

CONSULTING FIRM: Universal Environmental Consultants

STATE OF ACCREDITATION: Massachusetts

ACCREDITATION NUMBER: AI-034963

I certify as an inspector that I have re-inspected the said building in accordance with AHERA regulations 40 CFR Part 763 Section 763.88 and Commonwealth of Massachusetts DLS 454 CMR 28.

INSPECTOR SIGNATURE: 

DATE: May 16, 2024

MANAGEMENT PLANNER INFORMATION

MANAGEMENT PLANNER NAME: Leonard Busa

CONSULTING FIRM: Universal Environmental Consultants

STATE OF ACCREDITATION: Massachusetts

ACCREDITATION NUMBER: AP-000010

I certify as a Management Planner that I have reviewed this re-inspection report for the said building in accordance with AHERA regulations 40 CFR Part 763 Section 763.88 and Commonwealth of Massachusetts DLS 454 CMR 28.

MANAGEMENT PLANNER SIGNATURE: 

DATE: May 21, 2024

DESIGNATED PERSON INFORMATION

NAME: Kofi K. Agyeman Jr.
ADDRESS: 12 Martin Street, Millbury, MA
PHONE: (508) 865-9501
TRAINING FACILITY: _____
DATE OF TRAINING: _____

_____
Signature of Designated Person

DESIGNATED PERSON (DP) ASSURANCES

In accordance with 40 CFR § 763.93(i) of the Environmental Protection Agency (EPA) Asbestos Containing Building Material (ACM) in Schools regulation, the undersigned Local Education Agency (LEA) Designated Person (DP) hereby certifies that the following general responsibilities of the LEA under 40 CFR § 763.84 have been or will be met:

1. Ensure that the activities of any person, who perform inspections, re- inspections, and periodic surveillance, develop, and update management plans, and develop and implement response actions, including operations and maintenance, are carried out in accordance with Part 763, Subpart E.
2. Ensure that all custodial and maintenance employees are properly trained as required by Part 763, Subpart E and other applicable Federal and/or State regulations (e.g., the Occupational Safety and Health Administration asbestos standard for construction, the EPA worker protection rule, or applicable State regulations).
3. Ensure that workers and building occupants, or their legal guardians, are informed at least once each school year about inspections, response actions, and post-response action activities, including periodic re-inspection and surveillance activities that are planned or in progress.
4. Ensure that short-term workers (e.g., telephone repair workers, utility workers, or ex terminators) who may come in contact with asbestos in a school are provided information regarding the locations for ACM and suspected ACM assumed to be Asbestos Containing Materials (ACM).
5. Ensure that warning labels are posted in accordance with § 40 CFR 763.95.
6. Ensure that management plans are available for inspection and notification of such availability has been provided as specified in the management plan under § 40 CFR 763.93(g).
7. Designate a person to ensure that requirements under § 763.84 are properly implemented and ensure that the designated person receives adequate training to perform duties assigned under § 763.84. Such training shall provide, as necessary, basic knowledge of health effects of asbestos; detection, identification, and assessment of ACM; options for controlling ACM; asbestos management programs; relevant Federal and State regulations concerning asbestos, including those in Part 763, Subpart E and those of the Occupational Safety and Health Administration and the U.S. Environmental Protection Agency.
8. Consider whether any conflict of interest may arise from the inter-relationship among accredited personnel and whether that should influence the selection of accredited personnel to perform activities under Part 763, Subpart E.

1.0 INTRODUCTION:

On October 22, 1986**,** President Reagan signed into law an amendment to the Toxic Substance Control Act requiring schools to determine the presence of Asbestos Containing Materials in all school buildings. That amendment, called the Asbestos Hazard Emergency Response Act (AHERA) required that all school buildings be visually inspected by accredited inspectors and that bulk samples of suspected materials are taken where the material was not assumed to be asbestos. It further requires that management plans be created for each individual building and that the maintenance and custodial personnel receive training. The plan must be implemented, and the training must be completed by July 9, 1989. This document is the Asbestos Management Plan, which provides the means and the methods to effectively deal with Asbestos Containing Materials.

The AHERA regulation also requires that each school building be re-inspected every three years encompassing the following actions:

1. Visually re-inspect, and reassess, under 40 CFR Part 763 Section 763.88, the condition of all friable known or assumed ACM.
2. Visually inspect material that was previously considered non-friable ACM and touch the material to determine whether it has become friable since the last inspection or re-inspection.
3. Identify any homogeneous areas with material that has become friable since the last inspection or re-inspection.
4. For each homogeneous area of newly friable material that is already assumed to be ACM, bulk samples may be collected and submitted for analysis in accordance with 40 CFR Part 763 Section 763.86 and 40 CFR Part 763 Section 763.87.
5. Assess, under 40 CFR Part 763 Section 763.88, the condition of the newly friable material in areas where samples are collected and newly friable materials in areas that are assumed to be ACM.
6. Reassess, under 40 CFR Part 763 Section 763.88, the condition of friable known or assumed ACM previously identified.

All findings in this re-inspection report must be included in the original AHERA Management Plan.

DLS regulation also requires that each school building be re-inspected every three years encompassing the following actions:

(a) Inspections:

All local education agencies (LEAs) are required to inspect each school building that they lease, own, or otherwise use as a school building to identify all locations of friable and non-friable ACM, except for those buildings which have been inspected as required by the AHERA and for which documentation of said inspection was filed with the State as required by the AHERA prior to publication of 454 CMR 28.13(2).

The inspection must be conducted as described under 454 CMR 28.13(2)(b) and (c) prior to use as a school building.

1. Each inspection must be made by a currently licensed asbestos inspector.
2. For each area of a school building, except as excluded under 454 CMR 28.13(12), each licensed Inspector performing an inspection must:

    a. Visually inspect the area to identify the locations of all suspected ACM.
    b. Touch all suspected ACM to determine whether it is friable.
    c. Identify all homogeneous areas of friable suspected ACM and all homogeneous areas of non-friable suspected ACM.
    d. For each identified homogeneous area that is not assumed to be ACM, collect, and submit for analysis bulk samples under 454 CMR 28.13(4).

e. Assess under 454 CMR 28.13(4) friable material in areas where samples are collected, friable material in areas that are assumed to be ACM, and friable ACM identified during a previous inspection: and
f. Record the following and submit to the person designated under 454 CMR 28.13(1), a copy of such record for inclusion in the management plan within 30 days of the inspection:

    i. An inspection report with the date of the inspection, signed by each licensed person making the inspection and must include the license number and expiration date along with a copy of the current training certificate of the inspector.
    ii. An inventory of the locations of the homogeneous areas where samples are collected, exact location where each bulk sample is collected, dates that samples are collected, homogeneous areas where friable suspected ACM is assumed to be ACM, and homogeneous areas where non-friable suspected ACM is assumed to be ACM.
    iii. A description of the manner used to determine sampling locations, the name and signature of each DLS licensed inspector who collected the samples, including license number and expiration date along with a copy of current training certificates.
    Iv A list of whether the homogeneous areas identified under 454 CMR 28.12(2)(a)2. e. iv. are surfacing material, thermal system insulation, or miscellaneous material; and v. Assessments made of friable material, the name and signature of each licensed inspector making the assessment, his or her license number and expiration date and current training certificate.

(b) Re-inspection:

1. At least once every three years after a management plan is implemented, each local education agency must conduct a reinspection of all friable and nonfriable known or assumed ACM and any not previously identified suspect ACM, regardless of whether or not these areas were included in the original inspection and management plan, in each school building that they lease, own, or otherwise use as a school building. Each local education agency must submit to the Department within 30 days of the reinspection documentation that a reinspection has been performed. This documentation must be submitted on a form prescribed by the Director and submitted electronically to the Department's website by the LEA.
2. Each inspection must be made by a licensed inspector.
3. For each area of a school building, each person performing a reinspection must:

    a. Visually reinspect and reassess under 454 CMR 28.13(6) the condition of all friable and non-friable known or assumed ACM.
    b. Visually inspect material that was previously considered non-friable ACM and touch the material to determine whether it has become friable since the last inspection or reinspection.
    c. Visually inspect and assess under 454CMR 28.13(5) materials such as, but not restricted to, ceiling tile, wallboard, plaster walls, linoleum, fire doors, duct insulation and vibration dampening cloth, which are considered suspect ACM.
    d. Identify any homogeneous areas with material that has become friable since the last inspection or reinspection.
    e. For each homogeneous area of newly friable material that is already assumed to be ACM, may collect, and submit bulk samples for analysis in accordance with 454 CMR 28.13(3) and (4).
    f. Any remaining ACM that is present and was previously unidentified and is now accessible and visible will be included in the reinspection and provided a physical assessment under 454 CMR 28.13(6).
    g. Assess under 454 CMR 28.13(5) the condition of the newly friable material in areas where samples are collected, and newly friable materials in areas that are assumed to be ACM.
    h. Reassess under 454 CMR 28.13(5) the condition of friable known or assumed ACM previously identified.

        i. Record the following and submit to the person designated under 454 CMR 28.13(1) a copy of such record for inclusion in the management plan within 30 days of the reinspection:
        i. The date of the reinspection, the name and signature of the person making the reinspection, and any changes in the condition of known or assumed ACM.

ii. The exact locations where samples are collected during the reinspection, a description of the manner used to determine sampling locations, the name and signature of each licensed inspector who collected the samples, license number and expiration date.
iv. Any assessments or reassessments made of friable material, the name and signature of the licensed inspector making the assessments, license number and expiration date; and
v. General. Thermal system insulation that has retained its structural integrity and that has an undamaged protective jacket or wrap that prevents fiber release shall be treated as non-friable and therefore is subject only to periodic surveillance and preventive measures, as necessary.

2.0 SUMMARY:

A. Inspection:

All known or assumed to be ACM homogeneous areas were taken from the existing Management Plans and previous re-inspection reports or obtained during the inspection. Each of the ACM homogeneous[1] areas found in the existing Management Plans were reviewed and reassessed by the accredited inspector licensed in the State of Massachusetts. The reassessment was conducted by physically examining the ACM or suspect materials to determine friability and level of damage. These assessments can be found in the Inspection Spread Sheets, which also includes ACM, which was found to be physically damaged that might require corrective actions.

B. Inspection Spread Sheets of Asbestos Containing Materials:

The assessment chart contains homogeneous areas,' type of material, location of material, classification of ACM, friability and AHERA Assessment as follows:

AHERA ASSESSMENT CATEGORIES

CATEGORY 1	Damaged or significantly damaged thermal system insulation ACM
CATEGORY 2	Damaged friable surfacing ACM
CATEGORY 3	Significantly damaged friable surfacing ACM
CATEGORY 4	Damaged or significantly damaged friable miscellaneous ACM
CATEGORY 5	ACM with potential for damage
CATEGORY 6	ACM with potential for significant damage
CATEGORY 7	Any remaining friable ACM or friable suspected ACM

C. LEA Responsibilities:

The following requirements must be implemented as part of the EPA AHERA regulations.

- The LEA must designate a person who will be responsible of all AHERA requirements. The DP must have the required training (8 hours) that has to be performed at an EPA approved training provider.
- All custodians must have the required training (2 hours).
- Surveillance inspections of all Schools must be performed every six months by either a licensed asbestos inspector or the DP.
- All Schools must be inspected every three years and the Management Plans updated by a licensed asbestos inspector.
- Parents and teachers must be notified on a yearly basis of the presence of the AHERA Management Plans.
- Three-year inspections of all Schools must be performed by a licensed asbestos inspector.

[1] Homogeneous Area: Classification type for materials of similar appearance and texture. That is, materials throughout the facility that appear to be the same are grouped as one homogeneous area.

3.0 GLOSSARY OF TERMS

ABIH	American Board of Industrial Hygiene
Abatement	Any work done to minimize asbestos hazards including removal, encapsulation, and enclosure
Acoustical Insulation	Insulation used for the control of sound
Acoustical Tile	A finishing material in a building usually found in the ceiling or walls for the purpose of noise control.
AIHA Accredited Laboratory	A certification given by the AIHA to an analytical laboratory that has successfully participated in the "Proficiency Analytical Testing" program for quality control as established by the National Institute for Occupational Safety and Health
Airborne Asbestos Analysis	Determination of the number of asbestos fibers suspended in a given amount of air
Air Monitoring	The process of measuring the airborne fiber concentration of a specific quantity of air over a given amount of time
Air Plenum	Any space used to convey air in a building or structure, the space above a suspended ceiling is often used as an air plenum.
Air Sample	Sample of air taken for the purpose of determining a quantity of material found in the air.
Ambient Air	The surrounding air or atmosphere in a given area under normal conditions.
Approved Landfill	A site for the disposal of asbestos containing and other hazardous materials that are being removed
Asbestos	A generic name given to a number of naturally occurring hydrated mineral silicates that possess a unique crystalline structure, are incombustible in air, and are separable into fibers. Asbestos includes the Asbestiform varieties of Chrysotile (serpentine); Crocidolite (riebeckite); Amosite (cummingtonite-grunerite); Anthophyllite; and Actinolite.
Asbestos Abatement	Procedures to control fiber release from asbestos—containing materials in buildings.
Asbestos Exposure Assessment System	A decision tool which can be used to determine the extent of the asbestos hazard that exists in a building, and which can also be used to develop corrective actions.
Asbestos Fibers	Fibers greater than 5 microns long and a length to width ratio of at least 3:1, generated from an asbestos containing material.
Asbestos Standard	Refer to the OSHA requirements in the general industry standards regarding asbestos exposure (29 CFR 1910.1001), and EPA National Emission Standard for Hazardous Air Pollutants (NESHAP) (40 CFR 61,

	subpart 14) or Asbestos Abatement Projects (40 CFR Part 763) applicable for public employees
Asbestosis	A non-malignant, progressive, irreversible lung disease caused by the inhalation of asbestos dust and characterized by diffuse fibrosis. This disease usually occurs after high level exposure.
Atmosphere Supplying Respirators	Respiratory protection devices which exclude workplace air altogether and provide clean air from some independent source.
Bid	A statement of the price at which a contractor will complete a given project
Bulk Sample	Physical sample of the material (i.e., piece of covering or ceiling material). This is in contrast to an air sample where the air itself is sampled for fibers. Bulk samples are taken to determine if a material contains asbestos
Cancer	A cellular tumor which normally leads to premature death of its host unless controlled.
Ceiling Concentration	The maximum allowable level of toxic material that can be present at any given point in time
CFM	Cubic feet per minute
Clean Area	The first stage of the decontamination enclosure system in which workers prepare to enter the work area.
Contract Specifications	A set of guidelines that a contractor must follow when conducting an asbestos abatement job.
DEP	Department of Environmental Protection
Dirty Area	Any area in which the concentration of airborne asbestos fibers exceeds 0.01-f/cc, or where there is visible asbestos residue.
DLS	Department of Labor Standards
Electron Microscopy	A method of asbestos sample analysis which utilizes an electron beam to differentiate between fibers.
EPA	Environmental Protection Agency (Federal Agency)
F/CC	Fibers per cubic centimeters of air (a cubic centimeter is about the size of a sugar cube).
Friable Asbestos	Any materials that contain more than 1% asbestos by weight and can be crumbled, pulverized, or reduced to powder by hand pressure (i.e., asbestos pipe coverings, boiler casings, I-beam spray-on).
Glove bag	Plastic bag-type enclosure placed around asbestos-containing pipe lagging so that it may be removed without generating airborne fibers into the atmosphere.
HEPA	High Efficiency Particulate Air (Filter)

MSDS	Material Safety Data Sheet
Negative Pressure	An atmosphere created in a work area enclosure such that airborne fibers will tend to be drawn through the filtration system rather than leak out into the surrounding areas. The air pressure inside the work area is less than that outside the work area.
Non-friable Asbestos	Materials which contain mostly binder and do not generate dust under normal conditions. Note: non friable materials can become friable if cut, ground, sanded, etc. (i.e., floor tiles).
Operations & Maintenance Plan	Specific procedures and practices developed for the interim control of asbestos containing materials in buildings until it is removed.
OSHA	The Occupational Safety and Health Administration which was created by the Occupational Safety and Health Act of 1970; serves as the enforcement agency for safety and health in. the workplace environment.
Transmission Electron Microscopy (TEM)	A method of microscopic analysis which utilizes an electron beam that is focused onto a thin sample. As the beam penetrates (transmits) through the sample, the difference in densities produces an image on a fluorescent screen from which samples can be identified and counted.

SOURCE:

Asbestos Policy & Procedure Manual, "Guidelines for Management and Maintenance Personnel" Massachusetts Division of Occupational Hygiene Asbestos Program

4.0 RESOURCES REQUIRED FOR THE LEA

The following is an estimated cost required to carry out re-inspections, operation and maintenance, periodic surveillance and training and all other related costs. Abatement-related costs are listed below.

The annual estimated cost is $2,200.00.

5.0 RESOURCES REQUIRED TO-COMPLETE RESPONSE ACTIONS:

The following are estimated costs to properly remove and dispose of all ACM, to properly remove or repair and dispose of damaged ACM in the building in accordance with federal and state regulations. All abatement activities will be performed by Massachusetts licensed asbestos abatement contractors under the supervision of Massachusetts licensed asbestos project monitor. All asbestos abatement activities must be designed by a Massachusetts licensed asbestos designer. The estimated costs do not include replacement.

An EPA NESHAP regulation inspection must be performed prior to renovation or demolition projects. The listed costs do not apply since additional ACM might be found on the exterior of the building and in concealed locations. The costs also do not cover replacement and or re-insulation.

Various activities might be performed by in-house trained personnel. Refer to the O&M Plan.

The estimated cost to remove and dispose of all accessible ACM in the building is $50,000.00. The estimated cost for design, construction monitoring and air sampling is $7,500.00.

The estimated cost to remove/or repair and dispose of damaged ACM is $0.00. The estimated cost for design, construction monitoring and air sampling is $0.00

6.0 OBSERVATIONS AND RECOMMENDATIONS:

A Massachusetts licensed asbestos inspector was on site to perform the AHERA Third Year Re-Inspection. Please refer to this page in conjunction with the spreadsheets located in section two of this report for information regarding the location, condition, and assessments for ACM located throughout the building. Refer to O&M Program for preventive measures.

- All ACM was found to be in good condition.
- Refer to the previous inspection reports for suspect materials previously sampled.

7.0 DATES FOR RECOMMENDED RESPONSE ACTIONS:

ACM in the building was found to be in good condition. Continue O&M activities and ensure that no ACM is being disturbed. Remove ACM as needed.

8.0 MATERIALS FOUND NOT TO CONTAIN ASBESTOS

The following suspect materials were found not to contain asbestos.

Black Sink Damproofing.
Window Caulking.
Beige of 12” x 12” Vinyl Floor Tiles.
Mastic for Beige of 12” x 12” Vinyl Floor Tiles.
Textured Ceiling Plaster.
2’ x 4’ Acoustical Ceiling Tiles.
Joint Compound.
Science Counter-Tops.

Record Keeping Review

	LEA (Yes/No)	UEC (Yes/No)	Comments
Designated Person Statement: Is the report signed and also includes the LEA Designated Person information and training documentations.	_____	No	LEA was informed that reports must be signed by the Designated Person.
Training Documentation: Have all custodial and maintenance personnel received two-hour awareness training.	_____	No	LEA was informed that training is required.
Annual Notifications: Has the LEA posted or provided the annual notifications. If so, how.	_____	No	LEA was informed that Notifications is required. Copy is attached.
Periodic Surveillance: Are dated copies in the plan for each 6-month surveillance inspection.	Yes	Yes	UEC perform the surveillance inspections.
Outside Contractors: Does the LEA notify outside vendors that asbestos is present? Method used.	_____	No	LEA Shall use form found in the O&M Plan for Notifications.
Response Action Records: For any asbestos abatement in the last 3 years, are response action records included in the plan (Refer to the checklist or record).	_____	No	LEA shall keep all logs within the AHERA Plan.
Bulk Sample Reports: Are laboratory reports included for any suspect ACM that is not assumed ACM? Does the chain of custody list type and location of the suspect material sampled?	Yes	Yes	
Management Plan/Third Year Re-Inspection Report: Is a copy located in each school office and the LEA office.	_____	No	LEA shall place one copy at the office of the principal.
Warning Signs: Are warning signs posted in routine maintenance and storage areas where ACM is present.	_____	No	
Architect Statement: Is the architect statement present for any new construction, renovation or addition.	Yes	Yes	

Comments:

_____

_____

LOCAL EDUCATION AGENCY (LEA)
DESIGNATED PERSON
RESPONSIBILITY

The LEA shall be responsible for the following:

1. Arranging and coordinating training for all faculty and staff with annual updates for new personnel.
2. Arranging for abatement procedures called for in the abatement recommended actions.
3. Complying with all state, OSHA, Department of Labor Standards (DLS), or EPA rules or regulations regarding asbestos abatement activities.
4. Routine maintenance activities by in-house personnel.
5. Coordinating and overseeing work done by outside contractors if the possibility exists that ACM can be disturbed by this work.
6. Establishment of a respiratory protection program for "Asbestos Maintenance" in accordance with OSHA recommendations.
7. Procurement and maintenance of specialized equipment and supplies needed for implementation of this plan.
8. Monitoring of all Asbestos Containing Materials (ACM) in the building.
9. Ensure that all asbestos waste generated at the school is packaged, transported, and disposed of in accordance with EPA requirements and that the necessary chain of custody documentation is maintained.
10. Warnings, notifications, and record keeping as outlined in U.S. EPA Regulations 40 CFR Part 763 and the DLS 454 CMR 28.
11. Maintenance of all medical records required by OSHA for any school employees involved in in-house repair or removal of ACM.
12. Updating existing management program every six months.
13. Labeling ACM.

A. RESOURCES NEEDED:

EQUIPMENT:

- HEPA vacuum.
- Half-face respirator.
- Emergency repair tool kit.
- Disposable type suits.
- 6-mil polyethylene sheeting.
- Asbestos labeled bags.

SUPPORT PERSONNEL:

- Licensed Consultant.
- Trained Maintenance Personnel.

B. NOTIFICATION:

The LEA is responsible for informing all building occupants annually of the asbestos control program at the school. The best option is posting in the school's website. Notification serves two purposes: It alerts affected parties to a potential hazard in the building; and it provides basic information on avoiding the hazard. Building occupants, employees, and others who are aware of the presence of ACM are less likely to disturb the material and cause fiber release.

C. PERIODIC SURVEILLANCE:

At least once every six months, the LEA or his/her designee will conduct periodic surveillance in each building that contains ACM. Each person performing periodic surveillance shall:

1. Visually inspect all areas that have been identified as ACM.
2. Record the data of the surveillance, his or her name, and any changes in the condition of ACM.
3. Submit to the LEA DP a copy of such a record or report for inclusion into the management plan or permanent asbestos file.

D. RE-INSPECTION:

1. Re-inspection of friable and non-friable ACM every three years.
2. Inspection by an accredited inspector.
3. Re-inspection shall include:
   A. Visual re-inspection of all friable ACM and newly friable ACM.
   B. Reassessment of all friable ACM.
   C. Recheck all previously non-friable ACM to determine if they have become friable.
   D. Identify newly friable materials.
   E. Collect and submit samples of newly friable ACM if previously assumed to be ACM.
   F. Assess newly friable ACM.
   G. Reassess condition of previously identified friable ACM.
   H. Record and submit:
      1. Re-inspection report.
      2. Inventory of homogeneous areas. Exact sample site locations.
      3. Description of manner used to determine sample site locations.

E. RECORDKEEPING:

The O&M plan contains the specifications and forms for keeping records regarding any repair or removal work involving ACM. The record keeping procedure assures that:

1. Major repair work carried out by outside contractor is documented.
2. Minor repair work by qualified in-house worker is documented.
3. Monitoring of remaining asbestos is recorded.
4. Personnel records for training and medical monitoring are kept.

In general, this record keeping system must track two types of data: data on the physical condition of the ACM's and actions taken on those ACM's; the data associated with the personnel involved with the asbestos management program.

The condition of the material recorded at intervals (record of the inspection and surveillance), that recording of substantive changes in material status (removal, enclosure, or encapsulation), various required reports to governing bodies (notices of abatement and disposal actions to the EPA) and the recording of a new audited inventory in the context of the 3-year re-inspection.

Personnel tracking require: identity; training; medical monitoring; and exposure of the individual to be recorded on a form (which is to be on file for a period of at least 30 years). The following record formats and descriptions are intended as generalized basic examples of the type of records required for daily use.

LIST OF REQUIRED RECORDKEEPING:

1. Records location:
   A. Removal records retention.
   B. Records as part of the management plan.
2. For each preventive measure:
   A. Detailed written description of measure or action including,
      1. Location of measure or action.
      2. Methods used.
      3. Reasons for selecting the measure of action.

4. Name and addresses of all contractors involved.

B. Identification of person taking clearance air samples:
   1. Locations where samples were collected.
   2. Date of collection.
   3. Name and address of analysis lab.
   4. Date of analysis.
   5. Method of analysis.
   6. Name and signature of person performing the analysis.

3. For each person required to be trained.
   A. Name and job title.
   B. Date training completed.
   C. Location of training.
   D. Hours of training.
4. For each periodic surveillance:
   A. Name of person performing surveillance.
   B. Date of surveillance.
   C. Any changes in the conditions of materials.
5. For each cleaning:
   A. Name of each person performing cleaning.
   B. State and completion dates.
   C. Locations.
   D. Description of activity.
   E. Method of used.
6. For each time an O&M activity:
   A. Name of each person performing activity.
   B. State and completion dates.
   C. Locations.
   D. Description of activity.
   E. Measure used.
   F. Locations of storage/disposal site.
7. For each time that a major asbestos activity is performed:
   A. Name, signature, state of accreditation, number of persons performing activities.
   B. Start and completion dates.
   C. Locations and description of activity.
   D. Methods used.
   E. Location of storage disposal site.
   F. Results of any air sampling analysis performed.
8. For each fiber release episode:
   A. Date and location of the episode.
   B. Method of repair.
   C. Preventive measures taken.
   D. Name of each person performing work.
   E. Location of storage/disposal site.

THIRD YEAR RE-INSPECTION SPREADSHEETS

The regulations require that this report provide a considerable quantity of specific data related to asbestos containing materials within buildings. The information contained in these spreadsheets provides a condensed, easy to use summary of much of that data. It indicates whether or not the various building materials contain asbestos. If they do, the spreadsheets indicate where the asbestos is located, what kind of asbestos it is, and most importantly, what actions are recommended to be taken. The measures include both scheduled action by asbestos abatement contractors as well as day to day activities by the building's custodial and maintenance personnel.

You should find these spreadsheets easy to use and very helpful. To assist you in its use, the following pages provide column by column explanations of the spreadsheets.

HOMOGENEOUS AREA:
This column defines the various homogeneous areas throughout the building. It is important that you understand the concept of a homogeneous area. It is really very simple. By definition a homogeneous area is one in which the materials, are evenly mixed and similar in appearance and texture throughout. All that means is that the materials appear to be the same. Therefore, during the survey, all the materials throughout the school that appeared to be the same were grouped into homogeneous areas. For example, a given building may have had a white, speckled 2' x 2' suspended ceiling in several of the classrooms. Therefore, one homogeneous area was described as 2' x 2' suspended ceiling and its area was comprised of every school classroom in which that suspended ceiling was present. Another example is hard joints on pipe insulation. Generally, hard joints on pipe insulation are similar in texture and appearance. Therefore, all joints on a particular type of pipe were considered one homogeneous area.

As you can see a homogeneous area is just the means by which similar materials are grouped. The importance of the homogeneous area is that it provides a method to determine whether or not a material contains asbestos without having to sample every building material in every room. When homogeneous areas have been defined, representative samples of that material are taken and tested to determine whether or not they contain asbestos. Based on those test results, it can logically be presumed whether or not all the material in a given homogeneous area does or does not contain asbestos.

Turning to the spreadsheet you will see that in the first column each homogeneous area is assigned a number starting with 1. The number of homogeneous areas in each building will vary depending on how many types of building materials there are.

DESCRIPTION:
This column provides a brief description of what each homogeneous area is and lists all the areas within the building in which that material is present. For example, a description of one homogeneous area may be "Joint Insulation." Then under that description, will be a listing of all the rooms in the school in which that joint insulation is present.

SAMPLE DATE:
This column is for date of a sample that was collected.

SAMPLE:
If asbestos is either Yes, No, or Assumed.

DAMAGE:
Yes or No.

FRIABILITY:
If a material contains asbestos, this column indicates whether the material is friable or non-friable. A friable material is one that contains 1% or more of asbestos by weight and can be crumbled, pulverized, or reduced to powder by hand pressure. Non-friable materials are all other types of asbestos containing materials.

It is important to remember that the danger of asbestos is when the fibers become airborne. Therefore, friable asbestos is potentially more dangerous than non-friable asbestos. In this column each material containing asbestos is defined by "F" for friable or "NF" for non-friable.

AHERA ASSESSMENT CATEGORIES:
This column indicates the assessments made in accordance with EPA guidelines.

AHERA ASSESSMENT CATEGORIES

CATEGORY 1	Damaged or significantly damaged thermal system insulation ACM.
CATEGORY 2	Damaged friable surfacing ACM.
CATEGORY 3	Significantly damaged friable surfacing ACM.
CATEGORY 4	Damaged or significantly damaged friable miscellaneous ACM.
CATEGORY 5	ACM with potential for damage.
CATEGORY 6	ACM with potential for significant damage.
CATEGORY 7	Any remaining friable ACM or friable suspected ACM

RESPONSE ACTION DATES:
This column indicates start and completion dates to address each response action.

SPECIAL CLEANING NEEDED:
This column indicates if special and frequent cleaning would be required.

TYPE OF DAMAGE:
This column indicates type of damage of each area as (Damaged, Loose, Deteriorated, etc.).

RECOMMENDATIONS:
This column indicates the recommended action to complete the work (if needed).

6-MONTH SURVEILLANCE

INFORMATION

NAME: _____

CONSULTING FIRM/LEA: _____

ACCREDITATION NUMBER (If Applicable): _____

I certify that I have performed a surveillance inspection of the said building in accordance with AHERA regulations 40 CFR Part 763 and the Commonwealth of Massachusetts DLS 454 CMR 28.

SIGNATURE: _____

DATE: _____

COMMENTS: _____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

12-MONTH SURVEILLANCE

INFORMATION

NAME: _____

CONSULTING FIRM/LEA: _____

ACCREDITATION NUMBER (If Applicable): _____

I certify that I have performed a surveillance inspection of the said building in accordance with AHERA regulations 40 CFR Part 763 and the Commonwealth of Massachusetts DLS 454 CMR 28.

SIGNATURE: _____

DATE: _____

COMMENTS: _____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

18-MONTH SURVEILLANCE

INFORMATION

NAME: _____

CONSULTING FIRM/LEA: _____

ACCREDITATION NUMBER (If Applicable): _____

I certify that I have performed a surveillance inspection of the said building in accordance with AHERA regulations 40 CFR Part 763 and the Commonwealth of Massachusetts DLS 454 CMR 28.

SIGNATURE: _____

DATE: _____

COMMENTS: _____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

24-MONTH SURVEILLANCE

INFORMATION

NAME: _____

CONSULTING FIRM/LEA: _____

ACCREDITATION NUMBER (If Applicable): _____

I certify that I have performed a surveillance inspection of the said building in accordance with AHERA regulations 40 CFR Part 763 and the Commonwealth of Massachusetts DLS 454 CMR 28.

SIGNATURE: _____

DATE: _____

COMMENTS: _____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

30-MONTH SURVEILLANCE

INFORMATION

NAME: _____

CONSULTING FIRM/LEA: _____

ACCREDITATION NUMBER (If Applicable): _____

I certify that I have performed a surveillance inspection of the said building in accordance with AHERA regulations 40 CFR Part 763 and the Commonwealth of Massachusetts DLS 454 CMR 28.

SIGNATURE: _____

DATE: _____

COMMENTS: _____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

HIGH SCHOOL

HOM. AREA	DESCRIPTION	SAMPLE DATE	ASBESTOS (Y/N/A)	DAM	QUANTITY	FRIABLE	2024 ASSESSMENT 40 CFR 763.88	RESPONSE ACTION START/END DATES	SPECIAL CLEANING NEEDED	TYPE OF DAMAGE	RECOMMENDATIONS REFER TO REPORT FOR DATES AND COST ESTIMATES
1	**NEW TAN 12" X 12" VINYL FLOOR TILE**										
	FIRST FLOOR HALLWAY B		A	N	3,000 SF	NF	5		N		GOOD CONDITION - O&M
	B220			N	800 SF	NF	5		N		GOOD CONDITION - O&M
	SECOND FLOOR HALLWAY B			N	3,000 SF	NF	5		N		GOOD CONDITION - O&M
2	**MASTIC FOR NEW TAN 12" X 12" VINYL FLOOR TILE**										
	FIRST FLOOR HALLWAY B		A	N	3,000 SF	NF	5		N		GOOD CONDITION - O&M
	B220			N	800 SF	NF	5		N		GOOD CONDITION - O&M
	SECOND FLOOR HALLWAY B			N	3,000 SF	NF	5		N		GOOD CONDITION - O&M
3	**PIPE INSULATION**										
	TUNNELS		A	N	UNKNOWN	NF	5		N		ACCESS SEALED / GOOD CONDITION - O&M
4	**MASTIC ON BLOCK**										
	TUNNELS		A	N	UNKNOWN	NF	5		N		ACCESS SEALED / GOOD CONDITION - O&M
5	**BLACK SINK COATING**										
	SCIENCE PREP ROOM	1/21/14	N	N	4 EA						
	FACULTY PLANNING			N	1 TO						
	ARTS AND CRAFTS			N	4 EA						
6	**INTERIOR WINDOW CAULKING**										
	SCIENCE PREP ROOM	1/21/14	N	N	2 TO						
	MAIN OFFICE			N	1 EA						
	KITCHEN			N	5 TO						
	HALLWAYS			N	10 TO						

ASBESTOS TYPE
CHRY Chrysotile
AMOS Amosite
ACTI Actinolite
ANTH Anthophyllite
CROC Crocidolite
NA/PS Not Analyzed/Positive Stop

QUANTITY
SF Square Feet
LF Linear Feet
EA Each
TO Total

TYPE OF MATERIAL
M Miscellaneous
S Surfacing
T Thermal

ASBESTOS
Y Yes
N No
A Assumed

NOTES
HV - HEPA VACCUUM
2X/WK - TWICE PER WEEK
1X/WK - ONCE PER WEEK
L - LOOSE
DE - DETERRIORATED
D - DAMAGED
SD - SIGNIFICANT DAMAGE

(1) Damaged or significantly damaged thermal system insulation ACM.
(2) Damaged friable surfacing ACM.
(3) Significantly damaged friable surfacing ACM.
(4) Damaged or significantly damaged friable miscellaneous ACM.
(5) ACM with potential for damage.
(6) ACM with potential for significant damage.
(7) Any remaining friable ACM or friable suspected ACM.

HOM. AREA	DESCRIPTION	SAMPLE DATE	ASBESTOS (Y/N/A)	DAM	QUANTITY	FRIABLE	2024 ASSESSMENT 40 CFR 763.88	RESPONSE ACTION START/END DATES	SPECIAL CLEANING NEEDED	TYPE OF DAMAGE	RECOMMENDATIONS REFER TO REPORT FOR DATES AND COST ESTIMATES
7	**WHITE SINK COATING**										
	C120		A	N	1 EA	NF	5		N		GOOD CONDITION - O&M
8	**NEW BEIGE 12" X 12" VINYL FLOOR TILE**										
	CLASSROOMS	4/3/2020	N	N							
	CAFETERIA			N							
	HALLWAYS			N							
	A207			N							
	C132			N							
	A203			N							
				TOTAL	80,000 SF						
9	**BLACK MASTIC FOR NEW BEIGE 12" X 12" VINYL FLOOR TILE**										
	CLASSROOMS (BEIGE)	4/3/2020	N	N							
	CAFETERIA (BEIGE)			N							
	HALLWAYS (BEIGE)			N							
	A207			N							
	C132			N							
	A203			N							
				TOTAL	80,000 SF						
10	**YELLOW GLUE FOR NEW BEIGE 12" X 12" VINYL FLOOR TILE**										
	CLASSROOMS (BEIGE)	4/3/2020	N	N							
	CAFETERIA (BEIGE)			N							
	HALLWAYS (BEIGE)			N							
	A207			N							
	C132			N							
	A203			N							
				TOTAL	80,000 SF						

ASBESTOS TYPE
CHRY Chrysotile
AMOS Amosite
ACTI Actinolite
ANTH Anthophyllite
CROC Crocidolite
NA/PS Not Analyzed/Positive Stop

QUANTITY
SF Square Feet
LF Linear Feet
EA Each
TO Total

TYPE OF MATERIAL
M Miscellaneous
S Surfacing
T Thermal

ASBESTOS
Y Yes
N No
A Assumed

NOTES
HV - HEPA VACCUUM
2X/WK - TWICE PER WEEK
1X/WK - ONCE PER WEEK
L - LOOSE
DE - DETERRIORATED
D - DAMAGED
SD - SIGNIFICANT DAMAGE

(1) Damaged or significantly damaged thermal system insulation ACM.
(2) Damaged friable surfacing ACM.
(3) Significantly damaged friable surfacing ACM.
(4) Damaged or significantly damaged friable miscellaneous ACM.
(5) ACM with potential for damage.
(6) ACM with potential for significant damage.
(7) Any remaining friable ACM or friable suspected ACM.

HOM. AREA	DESCRIPTION	SAMPLE DATE	ASBESTOS (Y/N/A)	DAM	QUANTITY	FRIABLE	2024 ASSESSMENT 40 CFR 763.88	RESPONSE ACTION START/END DATES	SPECIAL CLEANING NEEDED	TYPE OF DAMAGE	RECOMMENDATIONS REFER TO REPORT FOR DATES AND COST ESTIMATES
11	**2' X 4' SUSPENDED ACOUSTICAL CEILING TILE TYPE I**										
	CLASSROOMS	4/3/2020	N	N							
	CAFETERIA			N							
	HALLWAYS			N							
	C132			N							
	A207			N							
				TOTAL	80,000 SF						
12	**TEXTURED CEILING PLASTER**										
	AUDITORIUM	2/26/2019	N	N	3,400 SF						
13	**SHEETROCK AND JOINT COMPOUND SOFFITS**										
	HALLWAYS	4/3/2020	N	N							
	CAFETERIA			N							
				TOTAL	2,000 SF						
14	**SCIENCE LAB COUNTERTOPS**										
	A207	4/3/2020	N	N	15 TO						
	A205			N	16 TO						
	A205 / A207 PREP			N	12 TO						
	A203			N	16 TO						
	A201			N	16 TO						
	A203 / A201 PREP			N	8 TO						

ASBESTOS TYPE

CHRY Chrysotile
AMOS Amosite
ACTI Actinolite
ANTH Anthophyllite
CROC Crocidolite
NA/PS Not Analyzed/Positive Stop

QUANTITY

SF Square Feet
LF Linear Feet
EA Each
TO Total

TYPE OF MATERIAL

M Miscellaneous
S Surfacing
T Thermal

ASBESTOS

Y Yes
N No
A Assumed

NOTES

HV - HEPA VACCUUM
2X/WK - TWICE PER WEEK
1X/WK - ONCE PER WEEK
L - LOOSE
DE - DETERRIORATED
D - DAMAGED
SD - SIGNIFICANT DAMAGE

(1) Damaged or significantly damaged thermal system insulation ACM.
(2) Damaged friable surfacing ACM.
(3) Significantly damaged friable surfacing ACM.
(4) Damaged or significantly damaged friable miscellaneous ACM.
(5) ACM with potential for damage.
(6) ACM with potential for significant damage.
(7) Any remaining friable ACM or friable suspected ACM.

OPERATIONS AND MAINTENANCE PLAN
HIGH SCHOOL

INTRODUCTION:
This operations and maintenance plan detail each type of repair, removal, or maintenance activity that is likely to be necessary to keep Asbestos Containing Materials (ACM) in good condition.

All Personnel MUST have a minimum of 16 hours training to perform any repair or removal for up to three (3) linear feet or square feet.

It is recommended that non-friable suspect materials be analyzed by Transmission Electron Microscopy (TEM) prior to disturbance.

The following suspect material that is either found, or assumed to be ACM:

Found to be ACM:

- None.

Assumed to be ACM:

- Pipe Insulation.
- Mastic on Block.
- White Sink Coating.
- Tan 12" x 12" Vinyl Floor Tile.
- Mastic for Tan 12" x 12" Vinyl Floor Tile.

OBJECTIVE:
The three main objectives of an Operations and Maintenance (O&M) program are:

1. To clean up existing contamination.
2. To minimize future fiber release by controlling access to ACM.
3. To maintain ACM until it is eventually removed.

Since by law all but small quantities of ACM must be removed from buildings before demolition, this O&M program is not a permanent solution. It is implemented as part of an overall asbestos management plan that has as its goal the elimination of asbestos exposure within the facility. The O&M program likewise is not a means by which full scale asbestos abatement is accomplished. Rather, intentional disruption of ACM should be limited to repair or removal of small areas of significantly damaged ACM, or small areas where removal is necessary to facilitate maintenance/renovation activities.

As long as ACM remains in the building, the O&M plan must remain in effect. Unless the program is implemented properly, exposure of maintenance workers and building occupants may not decrease. ACM may be disturbed by improper cleaning or repair methods. The O&M program should be established as soon as the presence of ACM is confirmed or assumed to be present. It must address friable material as well as material about to become friable, such as transite board to be cut or drilled. The O&M includes a general set of procedures that apply to periodic inspection, building renovation, maintenance, cleaning, and work done to maintain the material in good condition.

Though an O&M program may initially seem the most cost-effective solution to an asbestos problem, there are many additional costs that must be taken into consideration. Money that could have been spent on removal must have been spent on worker training, respirators, and health monitoring. These costs continue until the ACM is removed. Asbestos removal is required during renovation or demolition.

Operation and Maintenance plans vary with the type of material present in the building. All maintenance activities are regulated under the EPA CFR 763.121 "Worker Protection Act," OSHA 29 CFR 1926.1101 Asbestos Construction Standard, or Section 19 or the Occupational Health and Safety Act. Worker protection and safety requirements are of major importance if workers are exposed to the material in any way. Workers must be fit tested and respiratory equipment maintained. Medical examinations are also required in order to work with asbestos. These projects involve only areas that include less than three square or linear feet. Any larger project MUST be performed by a licensed contractor. Be certain that the LEA is aware of all activities involving ACM. All outside contractors must also be notified of the location of ACM. Building occupants and the parents of children must also be notified in writing. The following types of activities can be performed by in-house trained personnel:

- Normal maintenance HEPA vacuuming and wet wiping
- Repair or removal of pipe insulation.
- Removal of damaged ACM vinyl floor tiles.
- Repair or removal of small quantities of ACM on beams or above ceiling.
- Replacement of gasket or valve.
- Installation or removal of small section of drywall.
- Installation of electrical conduits through or near ACM.
- Removal of small quantities of ACM for maintenance activities.
- Removal of material that can be contained in one glove bag.
- Minor repairs to ACM wallboard.
- Small repairs that can be performed in a mini enclosure, including enclosure, encapsulation, and removal.

These activities must be used for maintenance or emergency repair, NOT just for removal. The following sections will explain how to perform each asbestos related activity. A sample form for documenting O&M activities is also included at the end of this section.

ORGANIZATIONAL STRUCTURE
The LEA Designated Person (DP) is responsible for the total implementation of this program and keeping the school board informed of all pertinent asbestos related activities. The DP is the main contact for any information on the asbestos control program. The responsibilities of the DP are included in this report.

NOTIFICATION OF OCCUPANTS
The DP is responsible for informing all building occupants, employees, parents, contractors, annually of the asbestos control program. Notification serves two purposes: it alerts affected parties to a potential hazard in the buildings, and it provides basic information on avoiding the hazard. Building occupants, employees, and others who are aware of the presence of ACM are less likely to disturb the material and cause fiber release. All new employees and building occupants during their initial orientation shall be informed of the asbestos control program and locations of ACM at this school.

LABELING
Labeling in areas where ACM is located is required in the case of thermal system insulation in mechanical rooms. Labeling is not intended as general information. It serves as a final line of defense to prevent unprotected individuals from disturbing ACM or entering areas where repair or renovation activities involving ACM are underway. Warning signs used in conjunction with small renovation or repair that involves the disruption of ACM should be posted at the entrances and around the perimeter of the project and in accordance with OSHA Asbestos Standard for the Construction Industry (29 CFR 1926.1101). Warning labels must be put on all ACM thermal system insulation in mechanical rooms that say the following:

CAUTION
ASBESTOS HAZARDOUS
DO NOT DISTURB WITHOUT PROPER

TRAINING AND EQUIPMENT

All labels shall be prominently displayed in readily visible locations and shall remain posted until the ACM that is labeled is removed.

TRAINING

Training of service (custodial and maintenance) workers is one of the most important aspects of an effective O&M plan. Training serves to establish proper awareness and understanding of work practices that are vital to the success of the program. All service workers should receive at least two hours of general awareness training. This training session should include, at a minimum, all the information outlined in the notification section. Service personnel who conduct any activities that will result in the disturbance of ACM must receive 14 hours of additional training which should include cleaning techniques, appropriate practices for handling ACM, the proper use of personal protective equipment, and hands on training. The training program should be conducted by the DP, or a person trained in asbestos control.

It should be noted that only up to three (3) linear feet of square feet could be performed by the trained personnel.

RESPIRATORY PROTECTION

Any employer who requires or permits employees to wear a respirator must have a written respiratory protection program. This is required by OSHA in both of their asbestos standards (29 CFR 1910.1001 and 1926.1101) and respiratory regulations (29 CFR 1910.134). The written respiratory program establishes standard operating procedures for the use and maintenance of respiratory equipment. The OSHA regulations outline exactly what must be included in a written program. Minimum respiratory protection requirements include the use of a half-face HEPA filter negative pressure respirator. A higher degree of protection can be achieved using a full-face mask or a power-assisted air purifying respirator (PAPR). It is preferable to use the highest level of protection possible when dealing with asbestos. Every worker who uses a respirator must have a medical exam and be fit tested. Never attempt to disturb asbestos without using properly fitted protective equipment. Personal exposure monitoring is required for workers to ensure that air levels are within the legal limits.

MEDICAL SURVEILLANCE

Employers are required to institute a medical surveillance program for all employees who are assigned to wear a negative-pressure respirator. All examinations and procedures must be performed by or under the supervision of a licensed physician at no cost to the employee. The purpose of the medical surveillance program is to establish an employee's fitness to wear a respirator, and to detect any changes in the gastrointestinal and cardiopulmonary systems as a result of working in asbestos contaminated areas. The OSHA regulation outlines what is required in the medical surveillance program.

PREVENTIVE MEASURES

The purpose of this is to eliminate the possibility of any disturbance and/or fiber release due to unknown activities. At a minimum, the following should be implemented:

1. Do not dry clean or sweep.
2. Do not cut, penetrate, sand, drill, break, nail into the ACM.
3. Do not hang plants, pictures, wires from the ACM.
4. Do not place items against the ACM.
5. Do not replace light fixtures where ACM, such as plaster, fireproofing and tiles is found.
6. Should ACM become damaged, seal, isolate the area and notify the consultant.

DESIGN AND AIR CLEARANCE REQUIREMENTS:

The work (greater than 3 LF or 3 SF) must be designed by a Massachusetts licensed asbestos abatement designer and clearance air sampling is performed by a Massachusetts licensed project monitor. The

purpose of the design is to include but not limited to the following:

- Scope of work.
- Location of work.
- Method to be utilized.
- Type of clearance air sampling.
- Scheduling and other related information.

CLEANING PROCEDURES

The cleaning activities described in this section are necessary for many different types of ACM. This section is referenced in the spread sheets for homogenous areas of friable ACM surfacing material, friable thermal system insulation and friable miscellaneous materials. No friable ACM was found.

1. **Initial Cleaning**
   (Not Required) Unless the building has been cleaned within the previous 6 months, all areas of a School building where friable ACM, damaged or significantly damaged thermal system insulation ACM, or friable suspected ACM assumed to be ACM are present shall be cleaned at least once after the completion of the inspection required by Sec. 763.85(a) and before the initiation of any response action, other than O&M activities or repair, according to the following procedures:
   a. Do not dry clean or sweep.
   b. HEPA-vacuum or steam-clean all carpets.
   c. HEPA-vacuum or wet-clean all other floors and all other horizontal surfaces.
   d. Dispose of all debris, filters, mop-heads, and cloths in sealed, leak-tight containers.
2. **Periodic Cleaning**
   Custodial staff should perform a thorough cleaning a minimum of twice weekly where friable ACM found. HEPA vacuum or steam clean all carpets, wet mop all other floors, and wipe all other horizontal surfaces with damp cloths. Dispose of debris, filters, mop heads, and cloths in sealed plastic bags according to EPA regulations. Report the presence of debris observed near ACM to the DP immediately. If debris accumulates, cleaning should be performed more often, and repair or removal should be completed to eliminate the hazard.
3. **Emergency Procedures**
   If an emergency occurs, immediately notify the LEA, and restrict access to the area. Common emergencies include pipe leaks, boiler breakdowns, and water damage. Keep the phone number of a dependable local contractor for problems that may be larger than the in-house staff can handle. If you are not certain of the size or the extent of the damage, have a contractor and consultant look at it immediately.
4. **Specialized Cleaning Procedures**
   Special cleaning practices should be followed in buildings with ACM. Cleaning up existing asbestos contamination within a building is one of the primary objectives of the O&M program. Things not to do when cleaning ACM:
   a. Do not sand backing material.
   b. Do not dust with a wire brush.
   c. Do not dry sweep floors.
   d. Do not use an ordinary vacuum to clean up asbestos debris.
   c. Do not use any method that might disturb the ACM.

The following precautions should always be used when cleaning ACM:

- All dusting and mopping of the ACM must be conducted using “wet” cleaning techniques (mops or cloths dampened with water or dust suppressant) or with special vacuum cleaner’s equipment with High Efficiency Particulate Air (HEPA) filters.
- Spray (mist) bottled water or dust suppressant should be available and used to keep the mops and cloths damp.
- Cleaning materials (mop heads, cloths, etc.) should be washed after each cleaning, changed at regular intervals, and discarded as asbestos waste
- The materials should be placed in 6 mil plastic bags, the bags sealed and labeled:

"DANGER CONTAINS ASBESTOS FIBERS
AVOID
CREATING DUST
CANCER AND LUNG DISEASE HAZARD,"

And the bags were deposited in an approved landfill. A disposal company could then transport the waste to an approved landfill periodically.
For each time that cleaning under Sec. 763.91(c) is performed, the local education agency shall record the name of each person performing the cleaning, the date of such cleaning, the locations cleaned, and the methods used to perform such cleaning.

MAINTENANCE OF VINYL ASBESTOS FLOORING (VAT)
Refer to the attached "Recommended Work Practice for Removal of Resilient Floor Covering" for more detailed procedures.

Proper upkeep, disturbance, and removal of VAT are explained in this section. This section is referenced in the spread sheets for all homogenous areas of VAT. Although the main emphasis of this section is for VAT, the practices described in subsection three and four for drilling and removing VAT are recommended procedures for all VAT. It must be remembered that even for VAT which lab analysis has determined to be asbestos free, the mastic used on it and on all vinyl base boards could contain asbestos and should never be made friable by sanding. Any VAT not identified by this inspection which may be revealed upon removal of carpeting should be considered to contain asbestos until lab analysis proves otherwise.

1. **Care of Vinyl Floor Tile (VAT)**
   Do not sand, abrade, wire brush or the use of any method that might release fibers of VAT. VAT are unlikely to release any fibers unless cut or sanded. Use HEPA attachments described in the section on cutting non friable materials. The adhesive that is used to stick floor tiles to the floor is likely to have asbestos in it also. Do not sand or wire brush the adhesive. The best way to deal with VAT is to use regular detergent and floor wax. Keep a heavy layer of wax on the surface and that will act as an encapsulant. Use all procedures outlined in the sections for respiratory protection, protective clothing, and work area preparation. Remember that the adhesive probably has more asbestos than the tile itself. Dispose of contaminated material and replace the tile with non-asbestos tile. Since the sharp tile edges could cut through a bag, wrap the tile in plastic and put them in a box. Wrap the box and put it in a bag or drum.
2. **Stripping/Waxing VAT**
   a. Wet methods must always be used when stripping, waxing, or buffing ACM vinyl flooring.
   b. Never dry buff the ACM vinyl flooring.
   c. Always have an HEPA vacuum and respirators available if needed.
   d. If a HEPA vacuum is required, all filters, cleaning clothes, and debris should be disposed of as asbestos waste.
3. **Drilling of VAT**
   If it is necessary to drill into ACM vinyl flooring (making the ACM friable) the following precautions must be taken.
   a. Worker or workers should wear NIOSH/MSHS approved respirators equipped with HEPA filter cartridges.
   b. Wet wipe the area to be drilled.
   c. Use an HEPA vacuum adjacent to the drilling operation to pick up fibers and debris as the drilling occurs.
   d. Dispose of any debris as asbestos waste as outlined in the previous section.
   e. Clean up area as outlined above.
4. **Removing or Repairing VAT**
   a. To remove small sections of floor tiles, dry ice or heat from a portable heater can be applied to the tops of the tiles, and then the tiles can be pried up.
   b. Use a 'wet' or solvent method to remove and clean the adhesive.
   c. Do not sand the adhesive from the base flooring.
   d. A HEPA vacuum or wet wiping should be used to clean up as outlined above.

e. All tiles, cloths, and debris must be disposed of as asbestos waste.

MAINTENANCE FOR THERMAL INSULATION

Maintenance activities affecting asbestos containing thermal system insulation generally involve plumbing-type repairs. Frequently the ACM must be removed to provide access to the valve, flange, or related system part needing maintenance. The extent of special work practices is tailor to reflect the likelihood that the ACM will be disturbed and that asbestos fibers will be released. Four categories of potential disturbance are defined: (1) contact with ACM is very unlikely, (2) accidental disturbance of ACM is possible, (3) disturbance of ACM is intended or likely - small disturbances (under three (3) feet of thermal system insulation), and (4) disturbance of ACM is intended or likely large disturbances (greater than three (3) feet of thermal system insulation).

1. **Contact with ACM Unlikely**
   Repairs which can be performed without contacting or disturbing the ACM require only normal care, good workmanship, and respirators. A HEPA vacuum should be available for use if required.
2. **Accidental Disturbance of ACM Possible**
   Maintenance tasks that involve no direct contact with ACM may cause accidental disturbance. Vibrations created by maintenance activities in one part of a piping network will be transmitted to other parts. Vibrations could then cause fibers to be released from insulation which is exposed or not in good condition. If in doubt about the possibility of fiber release, thoroughly inspect the asbestos—containing material before undertaking the maintenance or repair work. Then, either correct the problem before starting, or assume that the maintenance work may cause accidental disturbance and fiber release. In this case, the following procedures should be used:
   a. Approval should be obtained from the DP before beginning work. The DP or supervisor should make an initial visit to the work site.
   b. The work should be scheduled after normal working hours, if possible, or access to the work area should be controlled: doors should be locked from the inside and signs posted to prevent unauthorized persons from entering the work area
   (e.g., MAINTENANCE WORK IN PROGRESS, DO NOT ENTER"). Note emergency exits must remain in operation.
   c. The air-handling system should be shut off or temporarily modified to prevent the distribution of any released fibers to areas outside the work site.
   d. A 6-mil polyethylene plastic drop cloth should be placed beneath the location of the maintenance work, extending at least 10 feet beyond all sides of the work site.
   e. Plastic sheets (6-mil polyethylene) should be cut and taped around any asbestos containing insulation which might be accidentally disturbed. The plastic should be misted with amended water before sealing with tape. Workers should wear full respiratory protection and protective clothing.
   f. After the maintenance work is completed, all tools, ladders, and other equipment should be HEPA-vacuumed or wiped with a damp cloth. Special care should be taken when removing the plastic from the insulation to minimize disturbance of ACM dust or debris that may have fallen from the insulation.
   g. If any debris is apparent on the drop cloth, floor, or elsewhere, it should be HEPA-vacuumed.
   h. The plastic drop cloth should be wiped with a dampen cloth, carefully folded, and discarded as asbestos waste.
   i. All clothes, vacuum bags/filters, and other disposable materials should be discarded in sealed and labeled plastic bags as asbestos waste.
   j. Workers should HEPA-vacuum respirators and protective clothing at the work site. The clothing should then be discarded as asbestos waste. If the ACM was disturbed during the course of the work, the workers should leave their respirators on, proceed to a shower room, shower with respirators on, and clean their respirators while in the shower.
3. **Small Disturbance of ACM Intended**
   Where less than 3 feet of asbestos containing thermal system insulation must be removed to maintain or repair the thermal system, the following procedures should be used:
   a. Approval should be obtained from the DP before beginning work. The DP or supervisor should make an initial visit to the work site.

b. The work should be scheduled after normal working hours, if possible, or access to the work area should be controlled: doors should be locked from the inside and signs posted to prevent unauthorized persons from entering the work area (e.g. “MAINTENANCE WORK IN PROGRESS, DO NOT ENTER”). Note, emergency exists, must remain in operation.
c. The air-handling system should be shut off or temporarily modified to prevent the distribution of any released fibers to areas outside the work site.
d. Maintenance workers should wear at least air-purifying respirators with HEPA filters and protective clothing (suit, hood, and boots) in case of a fiber release accident.
e. The asbestos containing thermal system insulation should be removed as necessary for the repairs, and the repairs made using standard glove bag techniques where possible (refer to the EPA publication: “Asbestos-in-Building Technical Bulletin: Abatement of Asbestos containing Pipe Insulation,” 1986-2 and the OSHA Construction Industry Rule). Glove bags are fastened around the part to be repaired, the insulation is removed with knives and saws to make the part accessible, and the repairs are made using tools contained in the glove bag tool pouch.
f. At the conclusion of the work, Maintenance workers should clean their clothing using a HEPA vacuum and wet wiping.
g. All glove bags and any other used materials (including disposable clothing) should be discarded as asbestos waste, if the ACM was disturbed during the course of the work; the workers should leave their respirators on, proceed to a shower room, shower with respirators on, and clean their respirators while in the shower.
h. Non asbestos insulating material can be installed as necessary to replace insulation which was removed.

4. Large Disturbance of ACM Intended

When more than 3 feet of asbestos containing thermal system insulation must be removed to maintain or repair the thermal system, this is considered to be a large-scale disturbance of ACM, and glove bags are not feasible. With this situation an outside contractor should be hired for the removal project before the maintenance work begins.

If maintenance personnel are to conduct the asbestos removal, they must be thoroughly trained in removal techniques as required by OSHA. If the maintenance activities are likely to cause disturbance of ACM on pipes, boilers, or ducts at sites other than just those undergoing repair (due to vibration, etc.), then the entire room or area must be isolated and large-scale asbestos removal procedures employed. These include construction of containment barriers and ventilation system: use of protective clothing, and “type C” respirators by workers; proper disposal of asbestos debris; and proper cleanup of the work site followed by clearance air monitoring.

MAINTENANCE OF SINK DAMPROOFING

Do not drill, scrape, or remove the ACM. For removal retain the services of a licensed contractor. The ACM would still have to be disposed of as ACWM. Follow procedures listed in the Massachusetts Regulations 6.13 “Work Practices Involving Non-Friable Asbestos).

MAINTENANCE OF MASTIC ON BLOCK

Do not drill, cut, or remove the ACM. For removal retain the services of a licensed contractor. The ACM would still have to be disposed of as ACWM. Follow procedures listed in the Massachusetts Regulations 6.13 “Work Practices Involving Non-Friable Asbestos).

PROCEDURES FOR FIBER RELEASE EPISODES

As long as ACM remains in the building, a fiber release episode could occur. A fiber release episode is when the ACM becomes damaged in such a way as to release asbestos fibers to the atmosphere. Knowing the procedures necessary to control a fiber release episode is essential in any building which contains ACM. Reference to this section is recommended for all homogenous areas of ACM friable surfacing material and thermal system insulation including pipe, joint, tank, duct, and boiler insulation, which are listed on the sp read sheets of section four. Building custodial and maintenance staff should refer to this section to prevent a fiber release episode and to be thoroughly prepared for procedures should one occur. Custodial and maintenance workers should report to the DP the presence of debris on the floor, water, or physical damage to the ACM, or any other evidence of possible fiber release.

Fiber release episodes can also occur during maintenance or renovation projects. The DP should assign a suitably trained in—house team to clean up debris and make repairs as soon as possible. For fiber release episodes of ACM thermal system insulation, the following procedures should be used.

1. Workers should wear at minimum air purifying respirators with HEPA filters.
2. Debris should be thoroughly saturated with water or amended water using a mister with a very fine spray. The debris should then be placed in a labeled 6-mil plastic bag for disposal and the floor should be cleaned with dampen cloths or a mop, or the debris can be collected with, a HEPA vacuum cleaner.
3. Read the HEPA vacuum manual to thoroughly understand its operation before using it. Ask the sales representative for a detailed demonstration of how to use the HEPA vacuum. Always empty the vacuum under controlled conditions, remove the filter after dampening it and treat all waste as contaminated material. Misuse of a HEPA vacuum can cause a major contamination problem.
4. All debris and materials used in the cleanup should be discarded as asbestos waste.
5. Workers should vacuum their disposable suits, if used, before leaving the work site and discard them as asbestos waste.
6. The damaged ACM should be repaired with asbestos-free spackling, plaster, cement, insulation, re-wettable fiberglass or sealed with latex paint or an encapsulant.
7. Each fiber release episode should be documented, and a report should be filed in this management plan or in the permanent asbestos file.

REMOVAL OF ACM

1. All removal or repair projects should be correctly and safely set up. These are minimum work practices required by state and federal law. Work may not be performed if the area exceeds three square or linear feet. You must have a contractor do the work if it exceeds these size limits. Refer back to this section whenever you plan to disturb ACM material. The initial set up of any job that disturbs asbestos is as important as the actual removal itself. The following steps must be taken to ensure a safe project.

    a. Restrict entry by physical isolation or scheduling to ensure unauthorized persons do not enter the area.
    b. Post warning signs at all entrances to the site to prevent unauthorized entry.
    c. Shut of f air handling equipment or modify all air conditioning, heating, ventilation systems, etc. Restrict air movement (fans, windows).
    d. Remove moveable objects and cover remaining items with plastic. Duct tape 6-mill plastic over any remaining surfaces and duct tape to provide an air-tight seal. Decontaminate any objects that have debris by wet-wiping and HEPA vacuuming.
    e. Isolate the work area by sealing and taping vents, windows, air conditioners, ducts, drains, grills, windows, and doors etc. with plastic. If the building is occupied, the entrances to the work area must be sealed and caulked with plywood, gypsum board or a solid material. Plastic does not qualify as a critical barrier. Glove bag operations are exempt from this requirement. Ceramic tiles on floors, walls or ceiling that are impervious (no cracks, holes, fissures) need not be covered. If there is uncertainty regarding permeability, put up plastic.
    f. Cover walls and ceilings with plastic sheeting with seams and joints sealed with duct tape to make an impervious barrier to the floor, ceiling, wall etc. Two layers of plastic are required for the floor and walls with an overlap of 12” on the wall. The wall covering must overlap the floor.
    g. Ground fault circuit interrupters must always be used when working in a WET environment.
    h. Clean fixtures and equipment in the work area using proper cleaning methods.
    i. Properly dispose of all ACM in properly labeled, leak proof containers.
2. Asbestos projects that involve less than 25 square or linear feet require the use of a change room that is used as the sole entrance and exit to the facility. Before leaving the removal area to enter the change room HEPA vacuum and wet wipe the protective clothing. All other equipment must be decontaminated by wet-wiping and HEPA vacuuming or by wrapping the material in two layers of 6 mil plastic or put in a drum with a locking lid. Glove bag operations are exempt from this requirement. Use of a changing room is applicable to removal of surface material where a glove bag cannot be used.

3. Read the HEPA vacuum manual to thoroughly understand its operation before using it. Ask the sales representative for a detailed demonstration of how to use the HEPA vacuum. Always empty the vacuum under controlled conditions, remove the filter after dampening it and treat all waste as contaminated material. Misuse of a HEPA vacuum can cause a major contamination problem.
4. Any material that is enclosed must be clearly identified in the building records. The enclosure must be airtight wooden structures must be made with tongue and groove construction and caulked. Gypsum board seams must be taped. Drills and other tools should have a HEPA attachment and all electrical conduits, telephone lines, etc. must be moved so there is no reason to re-enter the area. If this cannot be accomplished, the area should not be contained. Any wrapped material such as a boiler or pipe must be labeled as asbestos. Suspended ceilings can not quality as enclosure since it is not airtight.
5. Liquid Encapsulant must be applied with an airless sprayer and are not to be used on severely damaged or deteriorating surfaces.
6. Asbestos must be wet when it is disturbed in any way. The material must be wet enough to keep the dust down, but not wet enough to cause the water to leak out of the project area. A surfactant must be used, as this increases the ability of the water to penetrate the fibers. During the project, dispose of asbestos as it accumulates in double 6-mil labeled bags or drums with locking lids. Do not remove the material and leave it on the floor. When working at heights do not throw debris to the ground, have another individual put the debris in the disposal container.

DISPOSAL OF ASBESTOS WASTE

Proper disposal of ACM material is an important procedure for the well being of the environment. This section of the O&M plan is referenced for all ACM material that was sampled and all material assumed to be ACM that is recorded on the spread sheets. Always refer to this section when disposing of asbestos waste. All ACM materials, waste, bags, and equipment (such as mop heads or air filters) must be disposed of in a labeled 6-mu polyethylene bag. The bag must be placed in a sealed impermeable container such as a drum. Water used for cleaning must be either filtered or placed in an impermeable container. A single drum may be used until it is full. The drum must be disposed of at a licensed landfill and a disposal receipt with the location obtained to prove that the waste was disposed of legally. An interim storage area must be secured and locked with only trained personnel having access to it.

Transportation must be done in closed trucks (not rented) and the truck wet cleaned after each use. The easiest way to dispose of small amounts of asbestos is to accumulate it and have a licensed contractor remove it. Find a local company willing to provide this service to you.

In a secured and isolated storage is limited to 30-days. Contract the DEP for any questions.

OUTSIDE SERVICE CONTRACTORS

If any outside contractor is employed to do work where the ACM may be disturbed (such as periodic cleaning, major renovation, or pipe repairs), contracts with such companies should include provisions to ensure that the workers can and will follow appropriate work practices. The contractor should provide proof that his workers have been properly notified about ACM in the building where the work is to take place (***see contractor acknowledgement form at the end of this section***). For a major renovation or removal, the contractor should also provide copies of the respiratory protection, medical surveillance, and worker training documentation submitted to OSHA. Also, the contractor should provide historical air monitoring data with emphasis on projects similar to those likely to be encountered in the building, for examples of previous projects.

PERIODIC SURVEILLANCE OF ACM

At least once every six (6) months, the DP or his designee will conduct periodic surveillance in each building that contains asbestos. Each person performing periodic surveillance shall:

1. Visually inspect all areas that have been identified as ACM.
2. Record the data of the surveillance, any changes in the conditions of the ACM, and the name of the individual conducting the surveillance.

3. Submit to the DP a copy of such a record or report for inclusion into the management plan or permanent asbestos file.

The DP is responsible for compliance to this section. An example of the periodic surveillance form to be used is shown at the end of this section.

EQUIPMENT NEEDED
Every school should have on-site at least one HEPA vacuum cleaner to be used when needed. Also at least one half-mask air-purifying respirator for each worker who may be required to wear one will be needed. An asbestos emergency repair kit which contains the equipment and tools necessary for repair of damaged ACM insulation and asbestos disposal bags is also recommended. Disposable suits may also be needed for maintenance workers.

A written respirator program as well as a written medical monitoring plan must be kept, and all work must comply with the written programs.

RECORDKEEPING
All written records discussed in this Operations and Maintenance program should be maintained as part of this management plan.

PERIODIC SURVEILLANCE REPORT

RETURN COMPLETED FORM TO ASBESTOS PROGRAM MGR.

PAGE___ OF___

DATE: ___ ___,____

Building Number and Name

ROOM Number and Name

Building Location

IF THE STATUS OF THE ACBM HAS CHANGED. THEN PHOTOGRAPH THE AREA AND RECORD THE PHOTOGRAPH NUMBER IN THE SPACE PROVIDED. NOTIFY THE ASBESTOS PROGRAM MANAGER CONCERNING THE CHANGE.

SAMPLE AREA/LOT OR SALIENT ID	SAMPLE AREA/LOT OR SALIENT DESCRIPTION	LAST MAT. COND.			CHANGE ?		NEW PHOTO NUMBER	NOTES
		T	DC	PD	YES	NO		

Signature of Person Completing Report

Title of Person Completing Report

* REFERS TO MATERIAL TYPE AND DAMAGE CATEGORIES
. T – MATERIAL TYPE AS:
. S – SURFACING
. M – MISCELLANEOUS
. T – THERMAL SYSTEM

DC – DAMAGE CONDITION
. ND – NO DAMAGE
. D – DAMAGE
. SD – SIGNIFICANT DAMAGE

PD – POTENTIAL DAMAGE CATEGORIES
. NPD – NO POTENTIAL DAMAGE
. PD – POTENTIAL DAMAGE
. PSD – POTENTIAL SIG. DAMAGE

OPERATIONS AND MAINTENANCE ACTIVITIES

BUILDING NAME: _____

ADDRESS: _____

ROOM NUMBER(s): _____

QUANTITY OF ACM REMOVED OR REPAIRED: _____

ACTIVITY START DATE: _____ **ACTIVITY END DATE:** _____

DESCRIPTION OF METHOD(S) USED DURING O&M ACTIVITY:

PERSONNEL PERFORMING ACTIVITIES:

NAME: _____

SIGNATURE: _____ DATE: _____

NAME: _____

SIGNATURE: _____ DATE: _____

NAME: _____

SIGNATURE: _____ DATE: _____

STORAGE OR DISPOSAL SITE INFORMATION:

STORAGE / DISPOSAL SITE NAME: _____

ADDRESS: _____

_____

******NOTE: ATTACH ALL WASTE SHIPMENT RECORDS******

CONTRACTOR ACKNOWLEDGEMENT FORM

PART A (To be completed by the LEA Designated Person)

☐ No known ACM Materials (ACM) will be impacted by the work required to be performed by the outside contractor(s).

☐ ACM may be impacted by the work required to be performed by the outside contractor(s). The outside contractor(s) has been notified as to the types and locations of ACM present. Notification has also been made with respect to proper work procedures as included in the inspection report Operations and Maintenance Program.

LEA Designated Person: _____

Signature: _____ Date: _____

PART B (To be completed by the Outside Contractor(s))

As an Outside Contractor I acknowledge that I have been informed about the ACM in the area in which contract work will be performed and that the statement in Part A of the form is accurate to the best of my knowledge.

Name of Employee: _____

Company: _____

Address: _____

_____

Telephone: _____

Signature: _____ Date: _____

EMPLOYEE TRAINING

NAME: ____________________ **DATE:** ____________
SIGNATURE: ____________________ **JOB TITLE:** ____________________
BUILDING: ____________________
TRAINING PROVIDER: ____________________ **COURSE TITLE:** ____________
ADDRESS: ____________________ **COURSE LENGTH:** ______
____________________ **CERTIFICATION NO:** ____________

NAME: ____________________ **DATE:** ____________
SIGNATURE: ____________________ **JOB TITLE:** ____________________
BUILDING: ____________________
TRAINING PROVIDER: ____________________ **COURSE TITLE:** ____________
ADDRESS: ____________________ **COURSE LENGTH:** ______
____________________ **CERTIFICATION NO:** ____________

NAME: ____________________ **DATE:** ____________
SIGNATURE: ____________________ **JOB TITLE:** ____________________
BUILDING: ____________________
TRAINING PROVIDER: ____________________ **COURSE TITLE:** ____________
ADDRESS: ____________________ **COURSE LENGTH:** ______
____________________ **CERTIFICATION NO:** ____________

NAME: ____________________ **DATE:** ____________
SIGNATURE: ____________________ **JOB TITLE:** ____________________
BUILDING: ____________________
TRAINING PROVIDER: ____________________ **COURSE TITLE:** ____________
ADDRESS: ____________________ **COURSE LENGTH:** ______
____________________ **CERTIFICATION NO:** ____________

AHERA RESPONSE ACTIONS RECORDS CHECKLIST

LOCAL EDUCATION AGENCY (LEA): _____

NAME OF SCHOOL: _____

ADDRESS: _____

DESIGNATED PERSON: _____

DESCRIPTION OF RESPONSE ACTION / PROJECT DESIGN:

- ❑ METHODS USED
- ❑ LOCATION OF RESPONSE ACTION
- ❑ START DATE
- ❑ COMPLETION DATE

PROJECT DESIGNER:

- ❑ NAME
- ❑ CERTIFICATION NUMBER

CONTRACTORS & WORKERS CONDUCTING ACTIVITY

- ❑ NAME
- ❑ ADDRESS
- ❑ CERTIFICATION NUMBER
- ❑ NAME / LOCATION OF STORAGE / DISPOSAL SITE

CLEARANCE DOCUMENTATION

- ❑ DATE VISUAL INSPECTION WAS CONDUCTED
- ❑ NAME OF PERSON PERFORMING VISUAL INSPECTION
- ❑ AIR SAMPLES COLLECTED AT COMPLETION OF RESPONSE ACTION USING AGGRESSIVE SAMPLING METHODS
- ❑ NAME, SIGNATURE AND CERTIFICATION NUMBER OF PROJECT MONITOR COLLECTING AIR SAMPLES
- ❑ DATE OF SAMPLE COLLECTION
- ❑ SAMPLE LOCATIONS
- ❑ AIR SAMPLES ANALYZED AT ACCREDITED LABORATORY
- ❑ LABORATORY NAME AND CERTIFICATION NUMBER
- ❑ ANALYSIS METHOD
    - ❑ PHASE CONTRAST MICROSCOPY (PCM)
    - ❑ TRANSMISSION ELECTRON MICROSCOPY (TEM)
- ❑ NAME AND SIGNATURE OF ANALYSTS
- ❑ RESULTS OF ANALYSIS (ATTACH LAB REPORT

SMALL SCALE, SHORT DURATION OPERATIONS AND MAINTENANCE ACTIVITIES CHECKLIST

LOCAL EDUCATION AGENCY (LEA): _____

NAME OF SCHOOL: _____

ADDRESS: _____

ROOM NUMBER: _____

QUANTITIES OF ACM (Removed or Repaired): _____

DESIGNATED PERSON: _____

DATE OF ACTIVITY: _____

METHOD USED: _____

NAME OF PERSON(S) PERFORMING WORK/CLEANING:

_____

(Name and Signature)

_____

(Name and Signature)

_____

(Name and Signature)

STORAGE OR DISPOSAL SITE: _____

_____

(Address and Phone Number)

THE COMMONWEALTH OF MASSACHUSETTS
EXECUTIVE OFFICE OF LABOR AND WORKFORCE DEVELOPMENT
DEPARTMENT OF LABOR STANDARDS

FIBER RELEASE EPISODE
GIUDANCE FOR THE DESIGNATED PERSON

A **fiber release episode**, as defined by the Department of Labor Standards (DLS) at 454 CMR 28.02 and AHERA 40 CFR 763.83, means any uncontrolled or unintentional disturbance of ACM material (ACM) resulting in a visible emission.

The use of best practices when responding to a fiber release episode will ensure that building occupants are protected, and that the fiber release episode is promptly and effectively remediated. The minimum requirements for responding to a fiber release episode are set forth in 454 CMR 28.13(7)(e)1 and 2. The Designated Person should assess the situation, implement initial steps to contain the release, and contact their asbestos consultant to assist with a prompt and effective response action.

A **minor** fiber release involves the disturbance of three or fewer square or linear feet of ACM. A **major** fiber release involves the disturbance of greater than three square or linear feet of asbestos. The response action for any **major** fiber release episode requires a project design specifying means and methods and must be conducted by a licensed asbestos contractor. The Local Education Agency (LEA) must notify DLS of any major fiber release within 24 hours of its occurrence, and if necessary, file written notification to the state [454 CMR 28.13(7)(e)2.d].

The initial steps that the Designated Person must take to protect building occupants include:

1. Isolating the area. Restrict access to the area by the general public. Foot traffic through the area can spread the extent of contamination to clean areas of the building and expose building occupants to asbestos fibers.
2. Post warning signs at all access points to the area. Signs should be large and readily visible. Signs should indicate: Restricted Area. Asbestos Hazard. No entry without proper training and equipment.
3. Shut down or temporarily modify the air handling system to prevent the distribution of airborne asbestos fibers to unaffected areas of the building.
4. Notify DLS within 24 hours of the release. Submit the standardized reporting form to DLS at Zachariah.Costa@mass.gov.
5. Contact the asbestos consultant to evaluate the situation, develop a project design for a major fiber release, and assist the Designated Person in developing a remediation strategy. The strategy may include bulk sampling, air sampling and/or wipe sampling.
6. Contact the asbestos contractor to clean visible debris and remove or repair damaged or exposed ACM as a result of a major fiber release.

Keep a record of the event in the AHERA management plan: date & location, description of episode, what interim control measures were used, the project design, contractor information and any air testing reports.

FIBER RELEASE EPISODE
NOTIFICATION FORM

Date(s) episode occurred:_____ Time of Day:_____

Was the building occupied: Yes_____ No_____

Name of School:_____

School Address:_____

Location where the episode occurred (include room number or clear designation of the area):_____
_____

Amount of ACM involved:_____ Type of ACM:_____

Describe what happened to create the fiber release episode:
_____
_____
_____
_____

What Preventive measures were used to protect building occupants?

- ☐ Isolate the area-Restrict entry (poly on doors, hard barriers)
- ☐ Post warning signs
- ☐ Modify HVAC to affected area
- ☐ Air testing performed
- ☐ Asbestos Consultant contacted for evaluation
- ☐ Project Design prepared--greater than 3 linear/square feet

Name of Consultant:_____

Name of asbestos contractor_____

Date corrective action was started/will start: _____

Submit this form within 24 hours of the event pursuant to 454 CMR 28.13(7)(e)2.d.
to: Zachariah.Costa@mass.gov

Note: retain a copy of this notice in your AHERA management plan.

DEPARTMENT
OF
LABOR STANDARDS
2021

454 CMR 28

454 CMR 28.00: THE REMOVAL, CONTAINMENT, MAINTENANCE, OR ENCAPSULATION OF ASBESTOS

Section

28.01: Purpose and Scope
28.02: Definitions
28.03: General Requirements
28.04: Worker Protection Requirements
28.05: Certification and Requirements for Certified Training Providers
28.06: Certification and Other Requirements for Asbestos Analytical Services
28.07: Certification of Consulting Service Providers and Individual Asbestos Consultants
28.08: Certification of Asbestos Contractors and Licensure of Asbestos Supervisors and Workers
28.09: Notification of Asbestos Project
28.10: Work Practices and Other Requirements for Asbestos Response Actions
28.11: Requirements and Work Practices for Floor and Wall Asbestos Operations and Maintenance Projects
28.12: Special Procedures for the Removal of Asbestos Roofing and Siding Materials
28.13: Requirements for Schools Subject to AHERA
28.14: Work Practices for Asbestos Cement Pipe (ACP)
28.15: Recordkeeping
28.16: Administrative License Actions/Denial, Revocation, Suspension or Refusal to Renew a License
28.17: Cease and Desist Orders
28.18: Responsibility for Compliance; Penalties
28.19: Severability
28.20: Fees

28.01: Purpose and Scope

(1) Purpose. 454 CMR 28.00 shall constitute requirements necessary to protect the health and safety of workers and the general public and establishes:

(a) Requirements necessary to protect the health and safety of the general public and persons engaged in, or associated with, the repair, removal, enclosure, encapsulation or disturbance of asbestos or asbestos-containing material.

(b) Standards of competency, certification and licensure for persons or entities engaged in or performing repair, removal, enclosure or encapsulation of asbestos or asbestos-containing material.

(c) Minimum standards to be used by insurers in the inspection of risk, measurement of hazards and the determination of adequate and reasonable rates of insurance as prescribed by the provisions of M.G.L. c. 152, § 65J.

(d) Standards for the certification and licensure of persons, firms, corporations or other entities who or which enter into, engage in or work at:

1. The business of repair, removal, enclosure or encapsulation of asbestos or asbestos-containing material;
2. The business of providing asbestos consulting services, including asbestos inspection services, asbestos risk assessment and management planning services, asbestos project design services and asbestos monitoring services;
3. The business of providing asbestos training where such training is required by 454 CMR 28.00; or
4. The business of providing asbestos analytical services.

(2) Scope. 454 CMR 28.00 applies to:

(a) all work, including construction, demolition, alteration or repair, involving any building or structure, including those owned or leased by the commonwealth or any of its political subdivisions or authorities, where such work involves the use or handling of asbestos or material containing asbestos, including the disposal of materials containing asbestos and asbestos contaminated waste. 454 CMR 28.00 also applies to asbestos training, consultation and/or analytical services including, but not limited to:

1. Asbestos inspection and hazard assessment services;

28.01: continued

2. The preparation of asbestos project designs, asbestos project oversight and/or monitoring;
3. Asbestos training required by 454 CMR 28.00; and
4. Asbestos analysis performed in connection with any of the above services.

(b) Nothing in 454 CMR 28.00 shall relieve any person from complying with all other applicable federal, state and local laws and regulations including, but not limited to, 42 U.S.C. § 7412 (Clean Air Act), 40 CFR Part 61, Subpart M (Asbestos National Emission Standard for Hazardous Air Pollutants), and 310 CMR 7.15: *U Asbestos*.

(3) Exceptions. The Director of the Department of Labor Standards may grant exceptions to 454 CMR 28.00 in those instances where it is clearly evident that existing conditions prevent compliance, or where compliance will create an undue hardship, but only in circumstances in which granting the exception will maintain the protection of the health and safety of workers and the general public.

Requests for exceptions to 454 CMR 28.00 must be submitted in writing to the Director and shall specify those provisions of 454 CMR 28.00 for which exceptions are sought, the reasons for requesting the exceptions and any proposed alternatives to the requirements of 454 CMR 28.00.

Exceptions granted by the Director may contain expiration dates otherwise they shall remain in force until rescinded.

(4) Alternative Methods. The Director shall have the authority to allow the use of newly-developed techniques, methods, or equipment that provide a level of protection for workers and the general public that equals or exceeds that specified by 454 CMR 28.00.

(5) Non-traditional Asbestos Abatement Work Practices. A person may apply to the Massachusetts Department of Environmental Protection to utilize Non-traditional Asbestos Abatement Work Practices that result in the need to deviate from normal work practices per of 310 CMR 7.15: *U Asbestos*.

(6) Right of Entry. Pursuant to M.G.L. c. 149, §§ 6, 6A, 10 and 17, the Director or the Director's authorized representative(s) shall have the right of entry to any work site, place of employment or other location for the purpose of conducting investigations or inspections of that worksite or associated records.

(7) Regulations Incorporated. The following rules and regulations of the United States Environmental Protection Agency are hereby incorporated by reference:

(a) Asbestos-containing Materials in Schools Rule; 40 CFR Part 763, Subpart E;
(b) Asbestos-containing Materials in Schools Rule; 40 CFR Part 763, Appendix C through Subpart E, Asbestos Model Accreditation Plan; and
(c) Asbestos Worker Protection Rule; 40 CFR Part 763, Subpart G.

28.02: Definitions

For the purpose of 454 CMR 28.00, the following definitions shall apply:

Accessible. Material that is subject to disturbance by building occupants or custodial or maintenance personnel in the course of their normal activities.

Accredited or Accreditation. Accredited in accordance with Title II of the Toxic Substance Control Act (TSCA), § 206, and the Department of Labor Standards.

Adequately Wet. To sufficiently mix or penetrate with liquid to reduce the release of particulates. If visible emissions are observed coming from asbestos-containing material, then that material has not been adequately wetted.

28.02: continued

Aggressive Method. Removal or disturbance of building material by sanding, abrading, grinding or other method that breaks, crumbles, or disintegrates intact ACM. When referring to clearance air sampling means to actively disturb air and dust to test for possible presence of asbestos.

AHERA. The Asbestos Hazard Emergency Response Act, 15 U.S.C. § 2641 *et seq*., and the regulations promulgated thereunder, including 40 CFR Part 763.

Air Erosion. The passage of air over friable asbestos-containing material (ACM) which may result in the release of asbestos fibers.

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

Asbestos. The asbestiform varieties of chrysotile, amosite, crocidolite, tremolite, anthophyllite, actinolite, and any of these minerals that has been chemically treated and/or altered. For purposes of 454 CMR 28.00, Asbestos includes Presumed Asbestos Containing Material (PACM), as defined in 454 CMR 28.02: Asbestos Containing Material (ACM).

Asbestos Abatement. Any activity which has as its principal purpose the removal, enclosure or encapsulation of asbestos-containing material.

Asbestos Analytical Services. Services involving the identification or measurement of asbestos in materials including, but not limited to:

(a) The counting or enumeration of asbestos fibers in the air (air monitoring); and

(b) The identification and quantification of asbestos in materials (bulk sample analysis), where such analyses are performed in connection with any asbestos hazard assessment, building inventory, exposure measurement, abatement project or associated project.

Asbestos Analytical Service Supervisor. A person so designated pursuant to 454 CMR 28.06, who is jointly responsible, along with other responsible persons, if any, of a certified asbestos analytical service for the adherence to the applicable analytical protocols, the maintenance of proper quality control procedures and the accuracy of the analytical results.

Asbestos Associated Project. Work operation involving the disturbance of three or fewer linear feet of asbestos located on pipes, ducts or wires or three or fewer square feet of asbestos surfacing located on structures or components other than pipes, ducts or wires and which does not have as its principal purpose the removal, enclosure or encapsulation of asbestos or asbestos containing material. Such activity shall include, but not be limited to, general building maintenance, electrical and low voltage wiring, plumbing, carpentry, masonry, HVAC and heating service.

Asbestos Associated Project Worker. Any person who has successfully completed the training specified in 454 CMR 28.05(8) and whose work is limited to Asbestos Associated Projects.

Asbestos Consultants. Licensed persons who perform design, oversight or assessment functions in asbestos abatement or asbestos hazard control, including asbestos inspectors, management planners, project designers and project monitors.

Asbestos Consulting Service. Advice, analysis or assistance relating to one or more of the following: asbestos inspection, asbestos risk assessment, asbestos management planning, asbestos project design or asbestos project monitoring.

Asbestos Consulting Service Provider. Any firm corporation business or entity who or which has a valid certificate issued by the Commonwealth pursuant to 454 CMR 28.07(1) for the purpose of entering into or engaging in the business of asbestos consulting services.

Asbestos Containing Material (ACM):

(a) Any material containing more than one percent asbestos, as determined by the methods set forth at 454 CMR 28.06(7) or any other method approved or recognized by the EPA for asbestos bulk sample analysis; or

(b) Any material designated as an asbestos-containing material by the EPA.

28.02: continued

Asbestos Containing Waste (ACW). Any ACM removed during a demolition or renovation project and anything contaminated with asbestos in the course of a demolition or renovation project including, but not limited to, asbestos waste from control devices including filters, bags or containers that previously contained asbestos, contaminated clothing, materials used to enclose the work area during the demolition or renovation operation, and demolition or renovation debris.

Asbestos Contractor. Any certified firm, corporation, business or other entity who performs, engages in or otherwise works at the business of Asbestos Abatement.

Asbestos Debris. Pieces of ACM and PACM that can be identified by color, texture, or composition, or dust, if the dust is determined by an accredited inspector to be ACM.

Asbestos Inspector. A licensed person who identifies, assesses the condition of, or collects pre-abatement samples of asbestos-containing materials.

Asbestos Management Planner. A licensed person who uses data gathered by asbestos inspectors to assess asbestos hazards, determine appropriate response actions and develop implementation plans.

Asbestos Project Designer. A licensed person who determines how asbestos abatement work should be conducted by preparing plans, designs, procedures, work scope or other substantive direction or criteria.

Asbestos Project Design. A site specific written work plan describing the means and methods for asbestos removal, enclosure, encapsulation or repair projects that exceed three linear or square feet of asbestos containing material in facilities, required for facilities subject to AHERA. The Project Design will describe the types, quantities and locations of ACM affected, and any specific characteristics related to the work site, and must be developed and signed by a licensed Project Designer.

Asbestos Project Monitor. A licensed person who:

(a) Collects air and bulk samples and performs visual inspections for the purpose of determining asbestos project completion;

(b) Collects environmental asbestos air samples for the purpose of assessing present or future potential for exposure to airborne asbestos; or

(c) Functions as the on-site representative of the facility owner or other persons by overseeing the activities of the asbestos contractor.

Asbestos Response Action. Any work operation involving the disturbance of more than three linear feet of friable asbestos on or in pipes, ducts or wires or more than three square feet of friable asbestos on or in structures or components other than pipes, ducts or wires.

Asbestos Supervisor. A licensed individual or agent of a licensed asbestos abatement entity having managerial or supervisory authority over asbestos workers with responsibility for the completion of asbestos response actions or portions thereof.

Asbestos Training Provider. Certified firms, corporations or other entities who enter into, engage in or work at the business of providing asbestos training.

Asbestos Work. The business of repair, removal, enclosure or encapsulation of asbestos or asbestos containing material in a facility.

Asbestos Worker. A licensed person not acting as a supervisor who performs asbestos work as an employee, or who performs such work under the direction and control of another, with or without compensation.

Category I Non-friable Asbestos-containing Building Material. Asbestos-containing packings, gaskets, resilient floor coverings, and asphalt roofing products containing more than 1% asbestos as determined using the method specified in EPA 600/R-93/116, or equivalent.

28.02: continued

Category II Non-friable Asbestos-containing Building Material. Any material excluding Category I non-friable ACM containing more than 1% asbestos as determined using the method specified in EPA 600/R-93/116, or equivalent, which when dry cannot be crumbled, pulverized or reduced to powder by hand pressure.

Cease and Desist Order. An order issued by the Director closing any work site where the Director determines that violations of a work place standard concerning the protection of the occupational health and safety of workers or the general public or of any standard or requirement of licensure/certification exist.

Certificate. A document issued by the Department:

(a) Permitting an individual (sole proprietor) or entity to engage in activities pertaining to asbestos abatement, asbestos analysis, asbestos training or asbestos consultation work;

(b) Permitting an Asbestos Contractor to engage in the activities set forth in 454 CMR 28.02: Asbestos Contractor;

(c) Permitting an Asbestos Training Provider to offer the training specified for the licensure or certification of persons engaging in asbestos abatement work regulated by 454 CMR 28.00; or

(d) Permitting an Asbestos Analytical Service to offer and perform asbestos analysis.

Certification. The issuance of a certificate pursuant to 454 CMR 28.00 authorizing a firm, corporation or business entity to engage in activities pertaining to asbestos work, including consultation activities, abatement removal or encapsulation of ACM, training, or asbestos analysis.

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 surfacing material. This includes, but is not limited to, the removal of asbestos-containing wallboard, floor tile and sheeting, roofing and siding shingles, and construction mastics.

Class III Asbestos Work. Activities that constitute 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 room having facilities for the storage of employees' street clothing and uncontaminated materials and equipment.

Clearance Air Monitoring. Air monitoring conducted by a licensed asbestos project monitor at the conclusion of an asbestos response action which is used in combination with visual inspection to assess adequacy of cleanup and project completion.

Competent Person. One who is capable of identifying existing asbestos hazards in the workplace and selecting the appropriate control strategy for asbestos exposure and who has the authority to take prompt corrective measures to eliminate them. In addition, for Class I and Class II work, a Competent Person is one who is specially trained in a course which meets the criteria of EPA's Model Accreditation Plan (40 CFR Part 763) for supervisor, or its equivalent, and, for Class III and Class IV work, one 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) or 454 CMR 28.13(8). Such training must be approved and conducted by a DLS Certified Asbestos Training Provider.

28.02: continued

Containment. As defined in 454 CMR 28.02: Enclosure.

Critical Barrier. Work area preparation enclosure consisting of at least one layer of plastic sheeting 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.

Cutting. To penetrate with a sharp-edged instrument and includes sawing, but does not include shearing, slicing, or punching.

Damaged ACM. ACM which has deteriorated or sustained physical injury or where the ACM has delaminated from its bond to the substrate. Such damage or deterioration may be illustrated by the separation of ACM into layers; separation of ACM from the substrate; flaking, blistering, or crumbling of the ACM surface; water damage; significant or repeated water stains, scrapes, gouges, mars or other signs of physical injury on the ACM. Asbestos debris originating from the ACM in question may also indicate damage.

Decontamination Area. An enclosed area adjacent and/or connected to the regulated area per 454 CMR 28.10(4)(b)5. 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 of a facility together with any related handling operations or the intentional burning of any facility.

Department. The Massachusetts Department of Labor Standards, as established by M.G.L. c. 23, §§ 1 and 11A.

Designated Person. A person appointed by the Local Education Agency (LEA), under 40 CFR 763.84(g), or 454 CMR 28.13(1)(b), who is trained to ensure the proper implementation of AHERA in school buildings.

Director. The Director of the Massachusetts Department of Labor Standards or his or her designee.

Disturbance. A physical disruption of the matrix of an asbestos-containing material or PACM which predisposes the material to fiber release or the generation of asbestos-containing dust or debris.

Emergency Project. Any asbestos project necessary to protect or preserve life or property from imminent harm, damage or deterioration, or is necessary to protect equipment from damage, or is necessary to avoid imposing an unreasonable financial burden as determined by the Director. Emergency Project includes operations necessitated by non-routine failures of equipment.

Employee Exposure. Employee exposure to asbestos.

Encapsulation. The application of a coating or liquid sealant to asbestos-containing material to reduce the tendency of the material to release fibers.

Enclosure. The covering or wrapping of friable asbestos-containing material in, under or behind air-tight barriers.

Engage. The phrase "engage in . . . the business of Asbestos Abatement, Consultation, Training, or Analytical Service" includes, but is not limited to, advertising Asbestos services, offering advice or training and/or submitting bids for projects where the majority of the contract-value is represented by requirements authorized by 454 CMR 28.00.

Entity. Any partnership, firm, association, corporation, sole proprietorship or any other business concern, state or local government agency or institution or political subdivisions or authorities thereof, or any religious, social or union organization, whether operated for profit or otherwise.

28.02: continued

EPA. The United States Environmental Protection Agency.

Equipment Room and/or (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.

Facility. Any building or structure including, but not limited to, those used for institutional, residential, commercial or industrial purposes, single family homes and vessels while ashore or in dry dock, and any associated equipment.

Facility Component. Any part of a facility including, but not limited to, any equipment, pipe, duct, boiler, tank, turbine, furnace, building material, insulation, load supporting and non-load supporting structural member, or non-structural member at the facility including Asbestos Cement Pipe (AC Pipe).

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

Fiber Release Episode. Any uncontrolled or unintentional disturbance of ACM resulting in visible emission.

Friable. A material that when dry, may be crumbled, pulverized, or reduced to powder by hand pressure, and includes previously non-friable material after such previously non-friable material becomes damaged to the extent that when dry it may be crumbled, pulverized, or reduced to powder by hand pressure.

Friable Asbestos-containing Material (Friable ACM). Any material containing more than 1% asbestos, which when dry may be crumbled, pulverized, or reduced to powder by hand pressure, or that has been subjected to sanding, grinding, cutting, or abrading or has been crumbled, shattered, or pulverized by mechanical means such as, but not limited to, the use of excavators, bulldozers, heavy equipment, or power and/or hand tool. Friable Asbestos-containing Material includes non-friable asbestos-containing material after such previously non-friable material becomes damaged or disturbed to the extent that when dry it may be crumbled, pulverized, or reduced to powder by hand pressure, or that has been subjected to sanding, grinding, cutting, or abrading or has been crumbled, shattered, or pulverized by mechanical means such as, but not limited to, the use of excavators, bulldozers, heavy equipment, or power and/or hand tool. The characteristic of friability shall apply to the asbestos material and is not influenced or affected by coverings, coatings or other means of separating asbestos materials by hand

Functional Space. A room, group of rooms, or homogeneous area (including crawl spaces or the space between a dropped ceiling and the floor or roof deck above), such as classroom(s), a cafeteria, gymnasium, hallway(s), designated by a person licensed to prepare management plans, design abatement projects, or conduct response actions.

Glove Bag. A manufactured plastic bag-type of enclosure with built in gloves, which is placed with an air tight seal around a facility component that permits asbestos-containing material in or on the Facility Component to be removed without releasing asbestos fibers into the air

Grinding. To reduce to powder or small fragments and includes mechanical grating, chipping or drilling.

HEPA Filtration. High efficiency particulate air filtration capable of filtering 0.3 micron particles with 99.97% efficiency.

HEPA Vacuum. A vacuum cleaner which has been designed with a high-efficiency particulate air (HEPA) filter as the last filtration stage. A HEPA filter is a filter that is capable of capturing particles of 0.3 microns with 99.97% efficiency. The vacuum cleaner must be HEPA rated and designed so that all the air drawn into the machine is expelled through the HEPA filter with none of the air leaking past it.

High-efficiency Particulate Air (HEPA) Filter. A filter capable of trapping and retaining at least 99.97% of all mono-dispersed particles of 0.3 micrometers in diameter.

28.02: continued

Homogeneous Area. An area of surfacing material, thermal system insulation material, or miscellaneous material that is uniform in size, color and texture and was applied at approximately the same time.

Inspection. Any activity undertaken in a facility or location for the purpose of determining the presence, location and/or condition of asbestos-containing material or PACM, whether by visual or physical examination and/or by the collection of samples of such material. Inspection includes recordkeeping performed in connection with such asbestos inspection activities and re-inspections of friable and non-friable asbestos-containing material, but does not include the following:

(a) Periodic surveillance of the type described in 40 CFR Part 763.92(b) solely for the purpose of recording or reporting a change in the condition of known or assumed asbestos-containing material;

(b) Inspections performed by employees or agents of federal, state or local government solely for the purpose of determining compliance with applicable statutes;

(c) Visual inspections of the type described in 40 CFR Part 763.90(i) that are conducted solely for the purpose of determining completion of asbestos response actions; or

(d) Sampling conducted by an employer or his or her agent immediately in advance of a work operation that would disturb a material of unknown asbestos content, where the sole purpose of the sampling is to determine potential worker or occupant exposure to asbestos.

Intact. Not having been made friable by mechanical action including, but not limited to, crumbling, pulverization, abrading, grinding, sawing, sanding, and not deteriorated to an extent where asbestos fibers contained within the material are no longer bound by the matrix of the material and not otherwise deteriorated.

License. One of the following documents issued by the Department:

(a) Permitting an individual to engage in activities pertaining to asbestos consulting activities including project monitoring, inspection, management planning, and project design;

(b) Permitting an Asbestos Supervisor to engage in the activities set forth in 454 CMR 28.02: Asbestos Supervisor; or

(c) Permitting an Asbestos Worker to engage in the activities set forth in 454 CMR 28.02: Asbestos Worker.

Licensure. The issuance of a license pursuant to 454 CMR 28.00 authorizing an individual to engage in activities pertaining to asbestos abatement, asbestos analysis, or asbestos consultation work.

Local Education Agency (LEA). A local Education Agency includes any of the following:

(a) Any local educational agency as defined in the Elementary and Secondary Education Act of 1965, § 198 (20 U.S.C. 6301, *et seq.)*.

(b) The owner of any nonpublic, nonprofit elementary or secondary school building.

(c) The governing authority of any school operated under the defense dependent's education system provided for under the Defense Dependents' Education Act of 1978 (20 U.S.C. 921, *et seq*.).

Major Fiber Release Episode. Any uncontrolled, intentional or unintentional disturbance of asbestos-containing material which produces visible debris, or emission and which:

(a) Involves the disturbance of:

1. More than three linear feet of friable asbestos-containing material on or in pipes, ducts or wires; or

2. More than three square feet of asbestos-containing material on or in structures or components other than pipes, ducts or wires.

(b) Produces an amount of asbestos-containing material (ACM) not smaller than a three foot glove bag or that which cannot be contained by a single 60-inch x 60-inch glove bag of conventional manufacture.

Management Plans. Plans that are required to be developed for any facility subject to AHERA, and include, but are not limited to:

28.02: continued

(a) An inspection report with general building description;
(b) Hazards assessments of all ACM and assumed ACM;
(c) Identification of any ACM or assumed ACM remaining in the building;
(d) Detailed written descriptions of response actions appropriate for the ACM identified;
(e) An Operations & Maintenance (O&M) program; and
(f) Evaluation of resources needed to implement the response actions and O&M.

Minor Fiber Release Episode. Any uncontrolled, intentional or unintentional disturbance of asbestos-containing material which produces visible debris, or emission and which:

(a) Involves the disturbance of:
1. Three or fewer linear feet of friable asbestos-containing material on or in pipes, ducts or wires; or
2. Three or fewer square feet of asbestos-containing material on or in structures or components other than pipes, ducts or wires; and
(b) Produces an amount of asbestos-containing material which can be contained by a single 60-inch x 60-inch glove bag of conventional manufacture.

Miscellaneous ACM. Miscellaneous material that is ACM in a facility, including a school building.

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

NIOSH. The National Institute of Occupational Safety and Health.

NIST. The National Institute of Standards and Technology.

Non-friable. Material which when dry may not be crumbled, pulverized, or reduced to powder by hand pressure.

Non-friable Asbestos-containing Materials (Non-friable ACM). Any material which contains more than 1% asbestos bound by a matrix which cannot, when dry, be crumbled, pulverized, or reduced to powder by hand pressure and that has not been subjected to sanding, grinding, cutting, or abrading and has not been crumbled, shattered, or pulverized by mechanical means such as, but not limited to, the use of excavators, bulldozers, heavy equipment, or power and/or hand tool. The class of non-friable asbestos-containing materials that typically includes, but is not limited to: asbestos cement pipe; sheathing siding and shingles; vinyl asbestos building materials, such as floor tiles; and asphaltic asbestos building materials, including asphaltic asbestos shingles and felts.

Operations and Maintenance (O&M) Program. A formulated plan of training, cleaning, work practices, and surveillance to maintain asbestos-containing materials (ACM) within facilities in good condition. The goal is to minimize exposure of all building occupants to asbestos fibers. To accomplish this objective, an O&M program includes work practices to:

(a) Maintain asbestos-containing material in intact condition;
(b) Ensure cleanup of asbestos fibers previously released;
(c) Prevent further release by minimizing disturbance or damage to asbestos-containing materials during renovation, maintenance, cleaning and general facility operations; and
(d) Provide for the long-term surveillance of actual or potential asbestos hazards in a facility.

Operations and Maintenance Work. Repair and maintenance work for buildings not subject to 454 CMR 28.13 (AHERA) and does not exceed ten square feet or 25 linear feet of material subject to 454 CMR 28.11.

Operations and Maintenance Worker. Any person who has successfully completed the training specified at 454 CMR 28.05(8).

28.02: continued

OSHA. The Occupational Safety and Health Administration of the United States Department of Labor.

Owner/Operator. (Reserved)

Person. (Reserved)

Personal Exposure Monitoring. The collection of air samples from the breathing zone of a person performing asbestos work for the purpose of determining that person's level of exposure to airborne asbestos fibers.

Phase Contrast Microscopy (PCM). The procedure outlined in NIOSH Method 7400 for the evaluation of fibers in air samples.

Planned Renovation Operations. A renovation operation, or a number of such operations, in which some RACM will be removed or stripped within a given period of time and that can be predicted. Individual nonscheduled operations are included if a number of such operations can be predicted to occur during a given period of time based on operating experience

Polarized Light Microscopy (PLM). Refers to EPA 600/R-93/116 or equivalent.

Potential for Damage. Circumstances in which either applies:

(a) ACM is in an area regularly used by building occupants, including maintenance personnel, in the course of their normal activities.

(b) There are indications that there is a reasonable likelihood that the material or its covering will become damaged, deteriorated, or delaminated due to factors such as changes in building use, changes in operations and maintenance practices, changes in occupancy, or recurrent damage.

Potential for Significant Damage. Circumstances in which any apply:

(a) ACM is in an area regularly used by building occupants, including maintenance personnel, in the course of their normal activities.

(b) There are indications that there is a reasonable likelihood that the material or its covering will become significantly damaged, deteriorated, or delaminated due to factors such as changes in building use, changes in operations and maintenance practices, changes in occupancy, or recurrent damage.

(c) The material is subject to major or continuing disturbance, due to factors including, but not limited to, accessibility or, under certain circumstances, vibration or air erosion.

Presumed Asbestos Containing Material (PACM). Building materials that potentially contain asbestos until such a time that the material is tested and found to be non-asbestos containing. The material is "presumed" to contain asbestos unless it is demonstrated, in accordance with this standard, that PACM does not contain asbestos.

Preventive Measures. Actions taken to reduce disturbance of ACM or otherwise eliminate the reasonable likelihood of the material's becoming damaged or significantly damaged.

Private Residence. A facility used exclusively for residential purposes containing three or fewer living units.

Regulated Asbestos Containing Material (RACM). Includes any of the folowing:

(a) Friable ACM;

(b) Category I non-friable ACM that has become friable;

(c) Category I non-friable ACM that will be or has been subjected to sanding, grinding, cutting, or abrading; or

(d) Category II non-friable ACM that has a high probability of becoming or has become crumbled, pulverized, or reduced to powder by the forces expected to act on the material in the course of demolition or renovation operations.

28.02: continued

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

Repair. Overhauling, rebuilding, reconstructing, or reconditioning by sealing patching, enclosing or encapsulating structures or substrates, including encapsulation or other repair of ACM or PACM attached to structures or substrates intended to prevent fiber release.

Resilient Floor Covering. Floor tile, including asphalt and vinyl floor tile, and sheet vinyl floor covering.

Response Action. A method, including removal, encapsulation, enclosure, repair, and operation and maintenance that protects human health and the environment from ACM.

Responsible Person(s). Persons having management control over the entity or employer. In the case of a corporation, the responsible person(s) shall be officers of the corporation and any other managing agent(s) of such corporation. In the case of a sole proprietorship or a partnership, the responsible person(s) shall be the owners or partners and any other managing agent(s) of such sole proprietorship or partnership.

Routine Maintenance Area. An area, such as a boiler room, storage room, custodial area or mechanical room, that is not normally frequented by students and in which maintenance employees or contract workers regularly conduct maintenance activities.

Sampling. The process of obtaining representative portions of materials suspected of containing asbestos, including the taking of bulk portions of materials for analysis to determine composition, and the collection of air for the purposes of measuring asbestos content.

School. Any elementary or secondary school as defined in the Elementary and Secondary Education Act of 1965, § 198 (20 U.S.C. § 6301, *et seq*.).

School Building. Includes each of the following:

(a) Any structure suitable for use as a classroom, including a school facility such as a library, school eating facility, or facility used for the preparation of food.

(b) Any gymnasium or other facility which is specially designed for athletic or recreational activities for an academic course in physical education.

(c) Any other facility used for the instruction or housing of students or for the administration of educational or research programs.

(d) Any maintenance, storage, or utility facility, including any hallway, essential to the operation of any facility described in School Building(a), (b), or (c).

(e) Any portico or covered exterior hallway or walkway.

(f) Any exterior portion of a mechanical system used to condition interior space.

Significantly Damaged ACM. Damaged ACM where the damage is extensive and severe and includes material with one or more of the following characteristics: Damage over more than $^{1}/_{10}$ of the surface if the damage is distributed, or more than ¼ if the damage is localized. Asbestos debris originating from the ACM in question may also indicate significant damage.

Small-scale Asbestos Project. Any work operation involving the disturbance of:

(a) three or fewer linear feet of friable asbestos on or in pipes, ducts or wires; or

(b) three or fewer square feet of friable or non-friable asbestos on or in structures or components other than pipes, ducts or wires.

Small-scale, Short-duration Activities (SSSD). Repairs, involving encapsulation, enclosure, or removal, to small amounts of friable ACM only if required in the performance of emergency or routine maintenance activity and not intended solely as asbestos abatement. Such work may not exceed amounts greater than those which can be contained in a single prefabricated mini-enclosure. Such an enclosure shall conform spatially and geometrically to the localized work area, in order to perform its intended containment function. SSSD includes tasks such as, but not limited to:

(a) Removal of asbestos-containing insulation on pipes;

28.02: continued

(b) Removal of small quantities of asbestos-containing insulation on beams or above ceilings;
(c) Replacement of an asbestos-containing gasket on a valve. Installation or removal of a small section of drywall;
(d) Installation of electrical conduits through or proximate to asbestos-containing materials;
(e) Removal of small quantities of ACM only if required in the performance of another maintenance activity not intended as asbestos abatement;
(f) Removal of asbestos-containing thermal system insulation not to exceed amounts greater than that which can be contained in a single glove bag;
(g) Minor repairs to damaged thermal system insulation which do not require removal; or
(h) Repairs to a piece of asbestos-containing wallboard.

State. The Commonwealth of Massachusetts

State of the Art. The latest and most sophisticated or advanced stage of technology or science that is generally accepted by, and applied to the fields of asbestos abatement, asbestos consulting, asbestos analysis and asbestos training. State of the art practices and procedures shall be in accordance with applicable state and federal regulations, professional standards generally recognized by the asbestos consulting industry and asbestos professional associations, and in accordance with current practices taught by Certified Training Providers.

Surfacing Material. Material in a building that is sprayed-on, 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, or other purposes containing more than 1% asbestos

Thermal System Insulation (TSI). ACM in a building applied to pipes, fittings, boilers, breeching, tanks, ducts, or other interior structural components to prevent heat loss or gain, or water condensation, or for other purposes.

Transmission Electron Microscopy (TEM). The method outlined in 40 CFR Part 763, Appendix A through Subpart E, for the identification of asbestos in air samples.

Vibration. The periodic motion of ACM which may result in the release of asbestos fibers.

Visible Debris. Any visually detectable particulate residue, such as dust, dirt or other extraneous material emission which may or may not contain asbestos.

Work Area. The area or location where asbestos abatement or asbestos-associated work is being performed including, but not limited to, areas used for accessing the location where asbestos work is being performed; areas used for the storage of equipment or materials related to asbestos work; and such other areas of a facility or location that the Director determines to be hazardous to the health and safety of workers and the general public as a result of such asbestos work.

Work Practices. The minimum standards, procedures or actions taken or used for repair, removal, enclosure or encapsulation of asbestos, or for renovation, demolition, maintenance or repair of facilities containing asbestos. Work Practices also includes the minimum standards, procedures or actions taken or used by persons engaged in inspection, analysis, risk assessment or other activities relating to asbestos work.

Working Day. Monday through Friday, excluding holidays that fall on Monday through Friday.

28.03: General Requirements

(1) Worker Protection. The requirements of the OSHA Asbestos Construction Standard, 29 CFR Part 1926.1101, including paragraphs (f), (h), (i) and (m), and other applicable OSHA standards shall apply to the personal protection and medical monitoring of employees, including employees of the Commonwealth or any of its political subdivisions, who perform work subject to these regulations. In addition, in accordance with 454 CMR 28.08(3)(d), Asbestos Contractors must maintain as records the results of all personal exposure monitoring, respirator fit testing and medical examinations required by 29 CFR Part 1926 and other applicable OSHA standards as a condition of licensure. Violations of OSHA regulations pertaining to worker protection may be referred to OSHA for enforcement action. The personal protection and medical monitoring of employees of the Commonwealth and its political subdivisions and other persons exempted from enforcement by federal OSHA must be in accordance with the provisions of 454 CMR 28.04, and M.G.L. c. 149, § 6½, which the Department enforces. Responsibility for compliance with such worker protection requirements rests with the employer and the Responsible Person(s) designated thereby.

(2) Requirements for the Use of Personnel.

(a) Persons engaged in Asbestos Work subject to 454 CMR 28.00 shall only perform or be assigned to perform those tasks authorized by 454 CMR 28.00. Performance of unauthorized tasks or functions shall be cause for administrative license action, civil penalty, or both.

(b) Persons must be at least 18 years of age or older to perform any Asbestos Work subject to 454 CMR 28.00 or to receive licensure in any asbestos-related discipline pursuant to 454 CMR 28.00.

(3) Requirement to Abate Asbestos Hazards. Asbestos-containing Materials that would be disturbed during the course of Asbestos-associated Work must be abated prior to the commencement of such work.

(4) Requirement for Schools to Comply with AHERA. Public and nonpublic elementary and secondary schools (K-12) shall comply with MA-AHERA found at 454 CMR 28.13.

28.04: Worker Protection Requirements

(1) Personal Exposure Monitoring. The employer must conduct personal exposure monitoring on all employees who perform Asbestos Abatement, Asbestos Associated Project Work and Operations and Maintenance Work, in accordance with OSHA Asbestos Regulations at 29 CFR Part 1926.1101, or EPA Asbestos Regulations at 40 CFR Part 763, Subpart G, and M.G.L. c. 149, §§ 6, and 6½, as applicable.

(2) Respiratory Protection.

(a) The employer must provide respiratory protection as specified at 29 CFR Part 1926.1101(h).

(b) Where powered air purifying respirators are used, a supply of charged replacement batteries, HEPA (NIOSH N, R or P 100) filters and flow test meters must be available at the worksite.

(c) Person(s) performing glove bag work and cleanup of Minor Fiber Release Episodes must wear a half-mask, dual cartridge, and HEPA filtered respirator (N, R or P 100) as the minimum level of respiratory protection.

(d) When negative air pressure respirators are used, they must be properly fit tested in accordance with OSHA Asbestos Regulations 29 CFR Part 1926.1101, using protocols detailed in Appendix C of that document.

(3) Protective Clothing and Equipment.

(a) The employer must provide all employees who perform Asbestos Abatement, Asbestos Associated Project Work or Operations and Maintenance Work with full-body disposable clothing consisting of material impermeable by asbestos fibers, and other equipment as required by the OSHA Asbestos Regulations at 29 CFR Part 1926.1101, and M.G.L. c. 149, §§ 6 and 6½, as applicable.

(b) Nonskid footwear must be provided to employees where slipping hazards exist. Disposable protective clothing must be adequately sealed to the footwear to prevent contamination.

(c) Employees must be provided with eye protection, gloves and hard hats, as required by OSHA Asbestos Regulations at 29 CFR Part 1926.1101, and M.G.L. c. 149, §§ 6, and 6½ as applicable.

28.04: continued

(4) Medical Monitoring. The employer must provide employees engaged in Asbestos Abatement, Asbestos Associated Project Work or Operations and Maintenance Work with the medical monitoring specified by OSHA Asbestos Regulations at 29 CFR Part 1926.1101(m). Physical examinations must be given by a board eligible/licensed occupational health physician or by a licensed physician with known expertise in occupational health. Persons other than licensed physicians who administer the pulmonary function testing must have completed a training course in spirometry sponsored by an appropriate academic or professional institution. All X-rays shall be classified only by a B-Reader, a board eligible/certified radiologist, or an experienced physician with known expertise in pneumoconiosis.

28.05: Certification and Requirements for Certified Training Providers

All training for Asbestos Associated Project Workers, Workers, Supervisors, Project Monitors, Inspectors, Management Planners and Project Designers conducted within the boundaries of Massachusetts shall be conducted only by Certified Training Providers.

Training Requirement for Reciprocity of Courses. Training must be provided by an EPA or Authorized State Training Provider in order to be considered for reciprocity and must be in substantial compliance with the content and time requirements set forth in 454 CMR 28.05.

(1) Advertising of Training and Refresher Courses.

(a) A training provider may not advertise a course as one approved by the Department until such approval is granted;

(b) A training provider may not include any false or misleading information regarding the contents, instructors, or number of classroom hours of any course approved under 454 CMR 28.05; and

(c) Once approved, the training provider shall use the course number in the course syllabus, in all other course materials used in connection with the course, and in all written advertising materials used in connection with the course.

(2) Licensed Asbestos Training Providers Must Perform the following as a Condition of Certification.

(a) Notify the Director, in writing, at least ten days prior to the commencement of any asbestos training course for which Licensure is required by 454 CMR 28.00, with the course title, location and anticipated start and end dates of said course.

(b) Notify the Director, in writing, of any changes in the start and end dates, course content, training methods, facilities, *etc*., which would alter the course of instruction from that originally submitted for Certification. (Minor changes in agenda, such as guest speakers, if otherwise qualified, and course schedule, are acceptable.)

(c) Notify the Director prior to the cancellation of any course.

(d) Verify the identity of each person who requests training by requiring that the applicant submit a form of government-issued, pictured identification. A list of acceptable identification is available at the Department's website.

(e) Where the applicant is requesting refresher training, verify that no more than one year has elapsed since the expiration date of the applicable initial or refresher training certificate most recently issued to the applicant.

(f) Require each person who receives training to sign in and out of each training session by completing the appropriate entries in a sign-in/out log at the time of each entry and exiting of the training area. Said sign-in/out log must include printed name, signature, Massachusetts License Number, where applicable, and the time of each entry or exiting.

(g) Require each person who completes the course and takes the examination required by 454 CMR 28.05(4)(a) through (f) and 454 CMR 28.05(5) to sign their examination answer sheet.

(h) Issue a training certificate to each student who successfully completes the asbestos training course. Said original training certificates must include the following:

1. A unique certificate number;

28.05: continued

2. Name of student;
3. License number of student, if available;
4. Discipline of the training course completed and course number;
5. Dates and duration of the training course;
6. Date of the examination;
7. Name of the lead instructor;
8. An expiration date of one year after the date upon which the person successfully completed the course and examination;
9. The name, address, telephone number, and license of the training provider that issued the certificate; and
10. A statement that the person receiving the certificate has completed the requisite training for asbestos accreditation under TSCA Title II.

(i) Certificates issued after July 1, 2021, must include a photophraph of the student on the face of the training certificate.

(j) Maintain the training records as required by 454 CMR 28.05(2)(r).

(k) Utilize and distribute information and training materials furnished by the Department.

(l) Provide written course materials, oral instruction and written examinations only in language in which each student is fluent, except that said written course materials, oral instruction and written examinations for Asbestos Supervisors and all Asbestos Consultant Disciplines must be in English, in accordance with EPA regulations and policies.

Obtain separate approval from the Department for each language in which courses will be conducted.

(m) Within five calendar days after the conclusion of each initial and refresher training course, provide to the Director: the title of the course; the date(s) on which the course was provided; the location where the course was given; the name, address, and Social Security Number of each student who successfully completed the course; the examination score of each person who took the course and the serial number of the training certificate issued to each student.

(n) Allow auditing inspections of approved training courses by the Director or his or her representative. Applicants from outside the Commonwealth shall, at the Department's option, bear the costs to the Department for one course audit per year for each course for which approval is granted pursuant to 454 CMR 28.05. Said costs shall include two-way travel, food and lodging expenses for one individual for the entire length of each course.

(o) Refresher courses shall be conducted as separate and distinct courses and not combined with any other training during the period of the refresher course. For each discipline, the refresher course shall review and discuss changes in Federal, State, and local regulations, developments in state-of-the-art procedures, and a review of key aspects of the initial training course as determined by the State. After completing the annual refresher course, persons shall have their accreditation extended for an additional year from the date of the refresher.

(p) Grace Period. Where an initial or refresher training certificate has expired, the holder shall have a grace period of one year from the date of expiration of said training certificate in which to take another refresher training course in the same discipline in *lieu* of re-taking the applicable initial course of training. This grace period does not apply to licenses or applications submitted to the Department.

(q) Any person who has successfully completed Asbestos-associated Project Worker training previously required by 454 CMR 28.00 prior to April 2, 2021 shall not be required to take another initial training course to fulfill his or her initial training requirements for participation in Operations and Maintenance Projects. Persons desiring to participate in Operations and Maintenance Projects shall have received the initial training specified at 454 CMR 28.05(8) and, where more than five years have elapsed since the date of the previous training, the refresher training specified by 454 CMR 28.05(8)(e) shall be required. The refresher training requirements of the OSHA Asbestos Standard 29 CFR Part 1926.1101 shall also apply to the training of Asbestos Operations and Maintenance Workers.

(r) Certified Training Providers shall maintain records for 15 years for the following documentation:

1. Copies of all written materials required to be submitted with the application for certification and course approval by 454 CMR 28.05;
2. Copies of all pre-course notifications required to be filed by 454 CMR 28.05 with applicable course agendas;

28.05: continued

3. Copies of all post-course notifications required by 454 CMR 28.05, including the name, address, telephone number, Social Security Identification Number and final examination score of each person who completed each course;
4. A copy of the certificate of completion of each student passing the course; and
5. The name, business address and telephone number of the person(s) who proctored the examinations.

(3) Provisions for Virtual Training Courses.

(a) Virtual courses shall only be approved for Training Providers already approved and who conduct in-person training. Separate approval is required for each type of virtual training a Training Provider intends to conduct.

(b) Training Providers must continue to offer in-person training even after virtual training is approved.

(c) Training Providers must submit a separate application for each course they intend to conduct as virtual training.

(d) Virtual training shall meet the requirements and conditions of 454 CMR 28.05(1) and (2).

(e) Training Providers shall include a Department login with password with their pre-course notification as required under 454 CMR 28.05(2)(a) and (b) to allow for course audits. Initial approval for a virtual course will be provisional until the Department has audited the course and given full approval.

(f) Training Providers shall have systems in place that authenticate the identity of the students taking the training and their eligibility to enroll in the course. Student authentication must be provided by or obtained from the student submitting personal and sensitive information to the training provider such as name, address, social security number, date of birth, license number, email address and/or special question and answer combination. That information may then be requested prior to beginning the virtual training, and at intermittent, designated intervals during the training. The Department recommends that appropriate encryption technologies be employed to protect sensitive user information. Such systems will help to deter fraud, including the falsification of student identity.

(g) Students must provide a self-attestation verifying identity and certifying they will not conduct fraud, cheat, or otherwise undermine the integrity of the course and test.

(h) A unique identifier must be assigned to each student for them to launch and relaunch the course.

(i) The Training Provider must track each student's course log-ins, launches, progress, and completion, and maintain these records in accordance with 454 CMR 28.05(2)(r).

(j) Training Providers must have systems in place that reduce opportunities for fraud, cheating or other actions that would undermine the integrity of the training.

(k) Virtual training must meet the same requirements as in-person training as listed in 454 CMR 28.05(4) and (5).

(l) Virtual training must be conducted in real time by a live instructor using real time web conferencing and audio.

Video and audio recordings typically used during an in-person training to augment learning may be used for online training as well.

(m) The instructor and students must have their cameras and microphones enabled.

1. The instructor must be seen and heard by all students.
2. The instructor must be able to see and hear all students.
3. Should there be an interruption of the instructor's camera or audio the course must be paused until they can both be restored.
4. Any student who loses camera or audio during the course will not receive credit for that portion of the course.

(n) Virtual courses may only be used for the portion of a course that does not require hands-on training. Hands-on training, where required, must be performed in-person.

(o) Any test of hands-on skills shall be conducted in-person.

(p) A final written test for virtual courses shall be provided and students required to pass as listed in 454CMR 28.05(6) and (7).

(q) Virtual final tests shall be conducted in a manner to prevent use of notes, cheating or other actions that would undermine the integrity of the testing process.

1. Tests shall be timed.
2. The instructor shall be able to monitor each student taking the test.

28.05: continued

(r) The Department requires training providers to issue course evaluations for their virtual courses to help determine the strengths and weaknesses of such courses and to promote continuous improvement.

(s) Virtual, web based, or online training courses provided in other states shall not meet requirements for reciprocity.

(t) Training certificates issued after completion of a virtual course will only be accepted from Training Providers certified by the Department.

(4) Massachusetts Specific Model Accreditation Plan (MAP) Training Requirements. The following sections describe the course content for asbestos training as set forth at 40 CFR Part 763, Appendix C: Subpart E - Asbestos Model Accreditation Plan, and includes specific training required by Massachusetts and its regulations. Initial Training Courses and Curriculum:

(a) Workers. Asbestos abatement worker course (initial) shall include a minimum of four training days with a minimum of 14 hours of hands-on training, including individual respirator fit testing. The training course shall address the following topics:

1. Physical Characteristics of Asbestos. Identification of asbestos, aerodynamic characteristics, typical uses, and physical appearance, and a summary of abatement control options.
2. Potential Health Effects Related to Asbestos Exposure. The nature of asbestos related diseases; routes of exposure; dose response relationships and the lack of a safe exposure level; the synergistic effect between cigarette smoking and asbestos exposure; the latency periods for asbestos related diseases; a discussion of the relationship of asbestos exposure to asbestosis, lung cancer, mesothelioma, and cancer of other organs.
3. Employee Personal Protective Equipment. Classes and characteristics of respirator types; limitations of respirators; proper selection, inspection; donning, use, maintenance, and storage procedures for respirators; methods for field testing of the face piece to face seal (positive and negative-pressure fit checks); qualitative and quantitative fit testing procedures; variability between field and laboratory protection factors that alter respiratory fit (*e.g.*, facial hair); the components of a proper respiratory protection program; selection and use of personal protective clothing; use, storage, and handling of non-disposable clothing; and regulations covering personal protective equipment.
4. State of the Art Work Practices. Proper work practices for asbestos abatement activities, including descriptions of proper construction; maintenance of barriers and decontamination enclosure systems; positioning of warning signs; lock-out of electrical and ventilation systems; proper working techniques for minimizing fiber release; use of wet methods; use of negative pressure exhaust ventilation equipment; use of high-efficiency particulate air (HEPA) vacuums; proper clean up and disposal procedures; work practices for removal, encapsulation, enclosure, and repair of ACM; emergency procedures for sudden releases; potential exposure situations; transport and disposal procedures; and recommended and prohibited work practices.
5. Personal Hygiene. Entry and exit procedures for the work area; use of showers; avoidance of eating, drinking, smoking, and chewing (gum or tobacco) in the work area; and potential exposures, such as family exposure.
6. Additional Safety Hazards. Hazards encountered during abatement activities and how to deal with them, including electrical hazards, heat stress, air contaminants other than asbestos, fire and explosion hazards, scaffold and ladder hazards, slips, trips, and falls, and confined spaces.
7. Medical Monitoring. OSHA and EPA Worker Protection Rule requirements for physical examinations, including a pulmonary function test, chest X-rays, and a medical history for each employee.
8. Air Monitoring. Procedures to determine airborne concentrations of asbestos fibers, focusing on how personal air sampling is performed and the reasons for it.
9. Relevant Federal, State and local regulatory requirements, procedures, and standards. With particular attention directed at relevant EPA, OSHA, and State regulations concerning asbestos abatement workers.
10. Establishment of respiratory protection programs.
11. Role of other licensed asbestos professionals.
12. Course Review. A review of key aspects of the training course.

28.05: continued

(b) Supervisors. Asbestos Supervisor course (initial) shall include a minimum of five training days with a minimum of 14 hours of hands-on training, including individual respirator fit testing. Hands-on training must permit supervisors to have actual experience performing tasks associated with asbestos abatement. The training course shall address the following topics:

1. The Physical Characteristics of Asbestos and Asbestos-containing Materials. Identification of asbestos, aerodynamic characteristics, typical uses, physical appearance, a review of hazard assessment considerations, and a summary of abatement control options.

2. Potential Health Effects Related to Asbestos Exposure. The nature of asbestos related diseases; routes of exposure; dose response relationships and the lack of a safe exposure level; synergism between cigarette smoking and asbestos exposure; and latency period for diseases.

3. Employee Personal Protective Equipment. Classes and characteristics of respirator types; limitations of respirators; proper selection, inspection, donning, use, maintenance, and storage procedures for respirators; methods for field testing of the face piece to face seal (positive and negative-pressure fit checks); qualitative and quantitative fit testing procedures; variability between field and laboratory protection factors that alter respiratory fit (*e.g.*, facial hair); the components of a proper respiratory protection program; selection and use of personal protective clothing; and use, storage, and handling of non-disposable clothing; and regulations covering personal protective equipment.

4. State of the Art Work Practices. Proper work practices for asbestos abatement activities, including descriptions of proper construction and maintenance of barriers and decontamination enclosure systems; positioning of warning signs; lock-out of electrical and ventilation systems; proper working techniques for minimizing fiber release; use of wet methods; use of negative pressure exhaust ventilation equipment; use of HEPA vacuums; and proper clean up and disposal procedures. Work practices for removal, encapsulation, enclosures, and repair of ACM; emergency procedures for unplanned releases; potential exposure situations; transport and disposal procedures; and recommended and prohibited work practices. New abatement-related techniques and methodologies may be discussed.

5. Personal Hygiene. Entry and exit procedures for the work area; use of showers; and avoidance of eating, drinking, smoking, and chewing (gum or tobacco) in the work area. Potential exposures, such as family exposure, shall also be included.

6. Additional Safety Hazards. Hazards encountered during abatement activities and how to deal with them, including electrical hazards, heat stress, air contaminants other than asbestos, fire and explosion hazards, scaffold and ladder hazards, slips, trips and falls, and confined spaces.

7. Medical Monitoring. OSHA and EPA Worker Protection Rule requirements for physical examinations, including a pulmonary function test, chest X-rays and a medical history for each employee.

8. Air Monitoring. Procedures to determine airborne concentrations of asbestos fibers, including descriptions of aggressive air sampling, sampling equipment and methods, reasons for air monitoring, types of samples and interpretation of results. EPA recommends that transmission electron microscopy (TEM) be used for analysis of final air clearance samples, and that sample analysis be performed by laboratories accredited by the National Institute of Standards and Technology's (NIST) National Voluntary Laboratory Accreditation Program (NVLAP).

9. Relevant Federal, State, and local regulatory requirements, procedures, and standards, including:

a. Requirements of TSCA Title II, including 40 CFR Part 763, Subpart E (AHERA).

b. National Emissions Standards for Hazardous Air Pollutants (40 CFR Part 61), Subparts A (General Provisions) and M (National Emission Standard for Asbestos).

c. OSHA standards for permissible exposure to airborne concentrations of asbestos fibers and respiratory protection (29 CFR 1010.1001 and 29 CFR 1910.134).

d. OSHA Asbestos Construction Standard (29 CFR 1926.1101).

e. EPA Worker Protection Rule, (40 CFR Part 763, Subpart G).

f. Requirements of the Department and the Massachusetts Department of Environmental Protection (MassDEP) relating to asbestos.

28.05: continued

10. Respiratory Protection Programs and Medical Monitoring Programs.
11. Insurance and Liability Issues. Contractor issues; worker's compensation coverage and exclusions; third-party liabilities and defenses; insurance coverage and exclusions.
12. Recordkeeping for Asbestos Abatement Projects. Records required by Federal, State, and local regulations; records recommended for legal and insurance purposes.
13. Supervisory Techniques for Asbestos Abatement Activities. Supervisory practices to enforce and reinforce the required work practices and discourage unsafe work practices.
14. Role of other licensed asbestos professionals.
15. Contract Specifications. Discussions of key elements that are included in contract specifications.
16. Course Review. A review of the key aspects of the training course.

(c) Inspectors. Asbestos Inspector course (initial) shall include a minimum of three days of training as outlined in 454 CMR 28.05(4)(c)1. through 15. The course shall include lectures, demonstrations, four hours of hands-on training, individual respirator fit-testing, course review, and a written examination. The inspector training course shall adequately address the following topics:

1. Background Information on Asbestos. Identification of asbestos, and examples and discussion of the uses and locations of asbestos in buildings; physical appearance of asbestos.
2. Potential Health Effects Related to Asbestos Exposure. The nature of asbestos related diseases; routes of exposure; dose response relationships and the lack of a safe exposure level; the synergistic effect between cigarette smoking and asbestos exposure; the latency periods for asbestos related diseases; a discussion of the relationship of asbestos exposure to asbestosis, lung cancer, mesothelioma, and cancer of other organs.
3. Functions/Qualifications and Role of Inspectors. Discussions of prior experience and qualifications for inspectors and management planners; discussions of the functions of a licensed inspector as compared to those of a licensed management planner; discussion of inspection process including inventory of ACM and physical assessment.
4. Role of other licensed asbestos professionals.
5. Legal Liabilities and Defenses. Responsibilities of the inspector and management planner; a discussion of comprehensive general liability policies, claims made and occurrence policies, environmental and pollution liability policy clauses; state liability insurance requirements; bonding and the relationship of insurance availability to bond availability.
6. Understanding Building Systems. The interrelationship between building systems, including: an overview of common building physical plan layout; heat, ventilation and air conditioning (HVAC) system types, physical organization, and where asbestos is found on HVAC components; building mechanical systems, their types and organization, and where to look for asbestos on such systems; inspecting electrical systems, including appropriate safety precautions; reading blueprints and as built drawings.
7. Public/Employee/Building Occupant Relations. Notifying employee organizations about the inspection; signs to warn building occupants; tact in dealing with occupants and the press; scheduling of inspections to minimize disruptions; and education of building occupants about actions being taken.
8. Pre-inspection Planning and Review of Previous Inspection Records. Scheduling the inspection and obtaining access; building record review; identification of probable homogeneous areas from blueprints or as built drawings; consultation with maintenance or building personnel; review of previous inspection, sampling and abatement records of a building; the role of the inspector in exclusions for previously performed inspections.
9. Inspecting for Friable and Non-friable ACM and Assessing the Condition of Friable ACM. Procedures to follow in conducting visual inspections for friable and non-friable ACM; types of building materials that may contain asbestos; touching materials to determine friability; open return air plenums and their importance in HVAC systems; assessing damage, significant damage, potential damage, and potential significant damage; amount of suspected ACM, both in total quantity and as a percentage of the total area; type of damage; accessibility; material's potential for disturbance; known or suspected causes of damage or significant damage; and deterioration as assessment factors.

28.05: continued

10. Bulk Sampling/Documentation of Asbestos. Detailed discussion of the "Simplified Sampling Scheme for Friable Surfacing Materials (EPA 560/5 85 030a October 1985 "EPA Pink Book")"; techniques to ensure sampling in a randomly distributed manner for other than friable surfacing materials; sampling of non-friable materials; techniques for bulk sampling; inspector's sampling and repair equipment; patching or repair of damage from sampling; discussion of polarized light microscopy; choosing an accredited laboratory to analyze bulk samples; quality control and quality assurance procedures. EPA's recommendation that all bulk samples collected from school or public and commercial buildings be analyzed by a laboratory accredited under the NVLAP administered by NIST.

11. Inspector Respiratory Protection and Personal Protective Equipment. Classes and characteristics of respirator types; limitations of respirators; proper selection, inspection, donning, use, maintenance, and storage procedures for respirators; methods for field testing of the face piece to face seal (positive and negative-pressure fit checks); qualitative and quantitative fit testing procedures; variability between field and laboratory protection factors that alter respiratory fit (*e.g.*, facial hair); the components of a proper respiratory protection program; selection and use of personal protective clothing; use, storage, and handling of non-disposable clothing.

12. Recordkeeping and Writing the Inspection Report. Labeling of samples and keying sample identification to sampling location; recommendations on sample labeling; detailing of ACM inventory; photographs of selected sampling areas and examples of ACM condition; information required for inclusion in the management plan required for school buildings under AHERA, § 203 (i)(1). EPA recommends that States develop and require the use of standardized forms for recording the results of inspections in schools or public or commercial buildings, and that the use of these forms be incorporated into the curriculum of training be conducted for licensure.

13. Regulatory Review. The following topics should be covered: National Emission Standards for Hazardous Air Pollutants (NESHAP; 40 CFR Part 61, Subparts A and M); EPA Worker Protection Rule (40 CFR Part 763, Subpart G); OSHA Asbestos Construction Standard (29 CFR Part 1926.1101); OSHA respirator requirements (29 CFR Part 1910.134); the Asbestos Containing Materials in Schools rule (40 CFR Part 763, Subpart E); applicable State and local regulations, and differences between Federal and State requirements where they apply, and the effects, if any, on public and non-public schools or commercial public buildings.

14. Field Trip. This includes a field exercise, including a walk through inspection; on site discussion about information gathering and the determination of sampling locations; on site practice in physical assessment; classroom discussion of field exercise.

15. Course Review. A review of key aspects of the training course.

(d) Management Planners. Asbestos Management Planner course (initial) shall include a minimum of three days of inspector training as outlined above and two days of management planner training. Possession of current and valid inspector training certificate shall be a prerequisite for admission to the management planner training. The management planner training course shall adequately address the following topics:

1. Course Overview. The role and responsibilities of the management planner; operations and maintenance programs; setting work priorities; protection of building occupants.

2. Evaluation/Interpretation of Survey Results. Review of AHERA requirements for inspection and management plans for school buildings as given in AHERA § 203(i)(1); interpretation of field data and laboratory results; and comparison of field inspector's data sheet with laboratory results and site survey.

3. Hazard Assessment. Amplification of the difference between physical assessment and hazard assessment; the role of the management planner in hazard assessment; explanation of significant damage, damage, potential damage, and potential significant damage; use of a description (or decision tree) code for assessment of ACM; assessment of friable ACM; relationship of accessibility, vibration sources, use of adjoining space, and air plenums and other factors to hazard assessment.

4. Legal Implications. Liability; insurance issues specific to planners; liabilities associated with interim control measures, in house maintenance, repair, and removal; and use of results from previously performed inspections.

28.05: continued

5. Evaluation and Selection of Control Options. Overview of encapsulation, enclosure, interim operations and maintenance, and removal; advantages and disadvantages of each method; response actions described *via* a decision tree or other appropriate method; work practices for each response action; staging and prioritizing of work in both vacant and occupied buildings; the need for containment barriers and decontamination in response actions.

6. Role of Other Professionals. Use of industrial hygienists, engineers, and architects in developing technical specifications for response actions; any requirements that may exist for architect sign off of plans; team approach to design of high-quality job specifications.

7. Role of Other Licensed Asbestos Professionals.

8. Developing an Operations and Maintenance (O&M) Plan. Purpose of the plan; discussion of applicable EPA guidance documents; what actions should be taken by custodial staff; proper cleaning procedures; steam cleaning and HEPA vacuuming; reducing disturbance of ACM; scheduling O&M for off hours; rescheduling or canceling renovations in areas with ACM; boiler room maintenance; disposal of ACM; in house procedures for ACM bridging and penetrating encapsulant; pipe fittings; metal sleeves; polyvinyl chloride (PVC), canvas, and wet wraps; muslin with straps; fiber mesh cloth; mineral wool, and insulating cement; discussion of employee protection programs and staff training; case study in developing an O&M plan (development, implementation process, and problems that have been experienced).

9. Regulatory Review. Focusing on the OSHA Asbestos Construction Standard found at 29 CFR 1926.1101; the National Emission Standard for Hazardous Air Pollutants (NESHAP) found at 40 CFR Part 61, Subparts A (General Provisions) and M (National Emission Standard for Asbestos); EPA Worker Protection Rule found at 40 CFR Part 763, Subpart G; AHERA; applicable State regulations.

10. Recordkeeping for the Management Planner. Use of field inspector's data sheet along with laboratory results; ongoing recordkeeping as a means to track asbestos disturbance; procedures for recordkeeping. EPA recommends that States require the use of standardized forms for purposes of management plans and incorporate the use of such forms into the initial training course for management planners.

11. Assembling and Submitting the Management Plan. Plan requirements in AHERA; the management plan as a planning tool.

12. Financing Abatement Actions. Economic analysis and cost estimates; development of cost estimates; present costs of abatement versus future operations and maintenance costs.

13. Course Review. A review of key aspects of the training course.

(e) Project Designers. Asbestos Project Designer course (initial) shall include a minimum of three days of training as outlined below. The project designer course shall include lectures, demonstrations, a field trip, course review and a written examination. The abatement project designer training course shall adequately address the following topics:

1. Background Information on Asbestos. Identification of asbestos; examples and discussion of the uses and locations of asbestos in buildings; physical appearance of asbestos.

2. Potential Health Effects Related to Asbestos Exposure. Nature of asbestos-related diseases; routes of exposure; dose response relationships and the lack of a safe exposure level; the synergistic effect between cigarette smoking and asbestos exposure; the latency period for asbestos related diseases; a discussion of the relationship between asbestos exposure and asbestosis, lung cancer, mesothelioma, and cancers of other organs.

3. Overview of Abatement Construction Projects. Abatement as a portion of a renovation project; OSHA requirements for notification of other contractors on a multi-employer site (29 CFR 1926.1101).

4. Safety System Design Specifications. Design, construction, and maintenance of containment barriers and decontamination enclosure systems; positioning of warning signs; electrical and ventilation system lock out; proper working techniques for minimizing fiber release; entry and exit procedures for the work area; use of wet methods; proper techniques for initial cleaning; use of negative-pressure exhaust ventilation equipment; use of HEPA vacuums; proper clean up and disposal of asbestos; work practices as they apply to encapsulation, enclosure, and repair; use of glove bags and a demonstration of glove bag use.

28.05: continued

5. Field Trip. A visit to an abatement site or other suitable building site, including on site discussions of abatement design and building walk through inspection. Include discussion of rationale for the concept of functional spaces during the walk-through.

6. Employee Personal Protective Equipment. Classes and characteristics of respirator types; limitations of respirators; proper selection, inspection; donning, use, maintenance, and storage procedures for respirators; methods for field testing of the face piece to face seal (positive and negative-pressure fit checks); qualitative and quantitative fit testing procedures; variability between field and laboratory protection factors that alter respiratory fit (*e.g.*, facial hair); the components of a proper respiratory protection program; selection and use of personal protective clothing; use, storage, and handling of non-disposable clothing.

7. Additional Safety Hazards. Hazards encountered during abatement activities and how to deal with them, including electrical hazards, heat stress, air contaminants other than asbestos, fire, and explosion hazards.

8. Fiber Aerodynamics and Control. Aerodynamic characteristics of asbestos fibers; importance of proper containment barriers; settling time for asbestos fibers; wet methods in abatement; aggressive air monitoring following abatement; and aggressive air movement and negative-pressure exhaust ventilation as a clean-up method.

9. Designing Abatement Solutions. Discussions of repair, removal, enclosure, and encapsulation methods; and asbestos waste disposal.

10. Final Clearance Process. Discussion of the need for a written sampling rationale for aggressive final air clearance; requirements of a complete visual inspection; and the relationship of the visual inspection to final air clearance. Department regulations regarding final clearance process.

11. Budgeting/Cost Estimating. Development of cost estimates; present costs of abatement versus future operation and maintenance costs; setting priorities for abatement jobs to reduce cost.

12. Writing Abatement Specifications. Preparation of and need for a written project design; means and methods specifications versus performance specifications; design of abatement in occupied buildings; modification of guide specifications for a particular building; worker and building occupant health/medical considerations; and replacement of ACM with non-asbestos containing substitutes.

13. Preparing Abatement Drawings. Significance and need for drawings; use of as built drawings as base drawings; use of inspection photographs and on-site reports; methods of preparing abatement drawings; diagraming containment barriers; relationship of drawings to design specifications; and particular problems related to abatement drawings.

14. Contract Preparation and Administration.

15. Legal/Liabilities/Defenses. Insurance considerations; bonding; hold-harmless clauses; use of abatement contractor's liability insurance; and claims made versus occurrence policies.

16. Replacement. Replacement of asbestos with asbestos free substitutes.

17. Role of Other Consultants. Development of technical specification sections by industrial hygienists or engineers; and the multi-disciplinary team approach to abatement design.

18. Role of Other Licensed Asbestos Professionals.

19. Occupied Buildings. Special design procedures required in occupied buildings; education of occupants; extra monitoring recommendations; staging of work to minimize occupant exposure; and scheduling of renovation to minimize exposure.

20. Relevant Federal, State and local regulatory requirements, procedures and standards including, but not limited to:

a. Requirements of TSCA Title II, including 40 CFR Part 763, Subpart E (AHERA).

b. National Emission Standards for Hazardous Air Pollutants, (40 CFR Part 61) Subparts A (General Provisions) and M (National Emission Standard for Asbestos).

c. OSHA Respirator Standard found at 29 CFR 1910.134.

d. EPA Worker Protection Rule found at 40 CFR Part 763, Subpart G.

e. OSHA Asbestos Construction Standard found at 29 CFR 1926.1101.

f. OSHA Hazard Communication Standard found at 29 CFR 1926.1200.

g. Requirements of the Department and the Mass DEP relating to asbestos.

h. Course Review. A review of key aspects of the training course.

28.05: continued

(f) Project Monitors. Asbestos Project Monitor course (initial) shall include a minimum of five days of training covering the topics outlined below. The course outlined in 454 CMR 28.05(4)(f)1. through 15. consists of lectures and demonstrations, at least six hours of hands-on training, course review, and a written examination. The hands-on training component might be satisfied by having the student simulate participation in or performance of any of the relevant job functions or activities (or by incorporation of the workshop component described in item "n" below of this unit). The project monitor training course shall adequately address the following topics:

1. Roles and Responsibilities of the Project Monitor. Definition and responsibilities of the project monitor, including regulatory/specification compliance monitoring, air monitoring, conducting visual inspections, and final clearance monitoring.
2. Characteristics of Asbestos and Asbestos-containing Materials. Typical uses of asbestos; physical appearance of asbestos; review of asbestos abatement and control techniques; presentation of the health effects of asbestos exposure, including routes of exposure, dose-response relationships, and latency periods for asbestos-related diseases.
3. Federal Asbestos Regulations. Overview of pertinent EPA regulations, including: NESHAP, 40 CFR Part 61, Subparts A and M; AHERA, 40 CFR Part 763, Subpart E; and the EPA Worker Protection Rule, 40 CFR Part 763, and Subpart G. Overview of pertinent OSHA regulations, including Construction Industry Standard for Asbestos, 29 CFR 1926.1101; Respirator Standard, 29 CFR 1910.134; and the Hazard Communication Standard, 29 CFR 1926.1200. Applicable State and local asbestos regulations; and regulatory interrelationships.
4. Understanding Building Construction and Building Systems. Building construction basics, building physical plan layout; understanding building systems (HVAC, electrical, *etc*.); layout and organization; where asbestos is likely to be found on building systems; and renovations and the effect of asbestos abatement on building systems.
5. Asbestos Abatement Contracts, Specifications, and Drawings. Basic provisions of the contract; relationships between the principal parties, establishing chain of command; types of specifications, including means and methods, performance, and proprietary and nonproprietary; reading and interpreting records and abatement drawing; discussion of change orders; and common enforcement responsibilities and authority of project monitor.
6. Asbestos Response Actions and Abatement Practices. Pre-work inspections; pre-work considerations, precleaning of the work area, removal of furniture, fixtures, and equipment; shutdown/modification of building systems; construction and maintenance of containment barriers, proper demarcation of work areas; work area entry/exit, hygiene practices; determining the effectiveness of air filtration equipment; techniques for minimizing fiber release, wet methods, continuous cleaning; abatement methods other than removal; abatement area clean-up procedures; waste transport and disposal procedures; and contingency planning for emergency response.
7. Asbestos Abatement Equipment. Typical equipment found on an abatement project; air filtration devices, vacuum systems, negative pressure differential monitoring; HEPA filtration units, theory of filtration, design/construction of HEPA filtration units, qualitative and quantitative performance of HEPA filtration units, sizing the ventilation requirements, location of HEPA filtration units, qualitative and quantitative tests of containment barrier integrity; and best available technology.
8. Personal Protective Equipment. Proper selection of respiratory protection; classes and characteristics of respirator types, limitations of respirators; proper use of other safety equipment, protective clothing selection, use, and proper handling, hard/bump hats, safety shoes; breathing air systems, high pressure *v*. low pressure, testing for Grade D air, and determining proper backup air volumes.

28.05: continued

9. Air Monitoring Strategies. Sampling equipment, sampling pumps (low *v*. high volume), flow regulating devices (critical and limiting orifices), use of fibrous aerosol monitors on abatement projects; sampling media, types of filters, types of cassettes, filter orientation, storage and shipment of filters; calibration techniques, primary calibration standards, secondary calibration standards, temperature/pressure effects, frequency of calibration, recordkeeping and field work documentation, calculations; air sample analysis, techniques available and limitations of AHERA on their use, transmission electron microscopy (background to sample preparation and analysis, air sample conditions which prohibit analysis, EPA's recommended technique for analysis of final air clearance samples), phase contrast microscopy (background to sample preparation, and AHERA's limits on the use of phase contrast microscopy), what each technique measures; analytical methodologies, AHERA TEM protocol, NIOSH 7400, OSHA reference method (non-clearance), EPA recommendation for clearance (TEM); sampling strategies for clearance monitoring, types of air samples (personal breathing zone v. fixed-station area) sampling location and objectives (pre-abatement, during abatement, and clearance monitoring), number of samples to be collected, minimum and maximum air volumes, clearance monitoring (post-visual-inspection) (number of samples required, selection of sampling locations, period of sampling, aggressive sampling, interpretations of sampling results, calculations), quality assurance; special sampling problems, crawl spaces, acceptable samples for laboratory analysis, and sampling in occupied buildings (barrier monitoring).

10. Safety and Health Issues Other than Asbestos. Confined-space entry, electrical hazards, fire and explosion concerns, ladders and scaffolding, heat stress, air contaminants other than asbestos, fall hazards, and hazardous materials on abatement projects.

11. Conducting Visual Inspections. Inspections during abatement, visual inspections using ASTM E1368 Standard Practice for Visual Inspection of Asbestos Abatement Projects; conducting inspections for completeness of removal; and discussion of "how clean is clean?"

12. Role of Other Licensed Asbestos Professionals.

13. Legal Responsibilities and Liabilities of Project Monitors. Specification enforcement capabilities; regulatory enforcement; licensing; and powers delegated to project monitors through contract documents.

14. Recordkeeping and Report Writing. Developing project logs/daily logs (what should be included, who sees them); final report preparation; and recordkeeping under Federal regulations.

15. Workshops (six hours spread over three days). Contracts, specifications and drawings: This workshop could consist of each participant being issued a set of contracts, specifications, and drawings and then being asked to answer questions and make recommendations to a project architect, engineer or to the building owner based on given conditions and these documents.

Air monitoring strategies/asbestos abatement equipment: This workshop could consist of simulated abatement sites for which sampling strategies would have to be developed (*i.e*., occupied buildings, industrial situations). Through demonstrations and exhibition, the project monitor may also be able to gain a better understanding of the function of various pieces of equipment used on abatement projects (air filtration units, water filtration units, negative pressure monitoring devices, sampling pump calibration devices, *etc*.).

Conducting visual inspections: This workshop could consist, ideally, of an interactive video in which a participant is "taken through" a work area and asked to make notes of what is seen. A series of questions will be asked which are designed to stimulate a person's recall of the area. This workshop could consist of a series of two or three videos with different site conditions and different degrees of asbestos contamination.

(5) Refresher Training. For all disciplines, annual refresher training as a requirement for relicensing as indicated in 454 CMR 28.05(5)(a) through (f):

(a) Workers. One full day (eight hours) of refresher training.

(b) Contractor/Supervisors. One full day (eight hours) of refresher training.

(c) Inspectors. Half day (four hours) of refresher training.

28.05: continued

(d) Management Planners. ½ day (four hours) of inspector refresher training and ½ day (four hours) of refresher training for management planners.
(e) Project Designers. One full day (eight hours) of refresher training.
(f) Project Monitors. One full day (eight hours) of refresher training.

The refresher courses shall be specific to each discipline. Refresher courses shall be conducted as separate and distinct courses and not combined with any other training during the period of the refresher course. For each discipline, the refresher course shall review and discuss changes in Federal, State, and local regulations, developments in state-of-the-art procedures, and a review of key aspects of the initial training course as determined by the DLS. After completing the annual refresher course, persons shall have their license extended for an additional year from the date of the refresher course.

(6) MAP Initial Course Examinations. The following are the requirements for examination in each initial MAP discipline:
(a) Worker. 50 multiple-choice questions;
(b) Contractor/Supervisor. 100 multiple-choice questions;
(c) Inspector. 50 multiple-choice questions;
(d) Management Planner. 50 multiple-choice questions;
(e) Project Designer. 100 multiple-choice questions;
(f) Project Monitor. 100 multiple-choice questions.

(7) MAP Refresher Course Examinations.
(a) Training providers shall determine successful completion of a refresher course by conducting a written examination consisting of 25 questions at the conclusion of the course.
(b) For all of the above courses; a score of 70% or higher shall be considered passing.

(8) Requirements for Operations and Maintenance Training (O&M) and Single Specialized Materials (Class II and III) Work.
(a) Asbestos 16-hour Operations & Maintenance (Class III OSHA).
1. Initial training for maintenance workers involved in general maintenance and asbestos material repair tasks. The course agenda includes physical characteristics of asbestos. Potential health effects related to asbestos exposure; Federal and State regulations; proper asbestos-related work practices; respirator user, care, and fit testing; protective clothing; hands-on exercises; and proper decontamination procedures. This course fulfills training requirements for Asbetos Associated Project Worker, OSHA Class III work, for OSHA Competent Person for Classes III and IV, and AHERA O&M. Course shall be 16 hours in length with a written multiple choice exam of 25 questions with a passing grade of 70% or above. Training certificates shall be annual.
2. Initial training for Asbestos Operations and Maintenance Workers may be given on non-consecutive days, provided that the entire course of instruction is given within a two-week period.
3. Single Specialized Material Training for Roofing, Flooring, Siding and Joint Compounds may be provided in accordance with OSHA training requirements.
4. Refresher training for asbestos O&M workers including review of topics originally presented in the initial course is required annually. This course features a presentation of new developments in government regulations, state-of-the-art work practices and asbestos abatement industry standards. Course shall be four hours in length with a written multiple choice exam of 25 questions with a passing grade of 70% or above.

(b) Class III Asbestos Work (16-hour). Repair and maintenance operations, where ACM, including TSI and surfacing ACM and PACM is likely to be disturbed. Course Topics/Agenda:
1. History, Types and Use of Asbestos and Asbestos Containing Materials;
2. Health Hazards of Asbestos Exposure;
3. OSHA, EPA and State Regulatory Requirements;
4. Other Safety and Health Hazards;
5. Medical Surveillance Program;
6. Respiratory Protection/Fit Testing;
7. Respiratory Care, Use and Maintenance;

28.05: continued

8. Personal Protective Equipment;
9. Glove Bag and Mini-enclosure Removal Demonstration;
10. Class III Control Measures and Work Practices;
11. State-of-the-art equipment and practices;
12. Setup of dust tight barriers and small-scale containments;
13. Containment Clean up and decontamination;
14. Personal Hygiene;
15. HEPA Vacuum use, care and maintenance; and
16. Course Review.

(c) Class IV Asbestos Work (two-hour). 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.

(d) Issue a training certificate to each student who successfully completes the asbestos training course. Said original training certificates must include the following:

1. A unique certificate number;
2. Name of accredited person;
3. Discipline of the training course completed;
4. Dates of the training course;
5. Date of the examination;
6. An expiration date of five years after the date upon which the person successfully completed the course and examination; and
7. The name, address, and telephone number of the training provider that issued the certificate.

(e) Refresher Training within five years shall be ½ day (four hours) in duration. There is no grace period.

(f) Written multiple choice exam of 25 question with a passing grade of 70% or above for initial and refresher training.

(9) The Asbestos Pipe Specialized Initial Training shall consist of:

(a) eight hours training to include hands-on training.

(b) The training course shall address at least the following topics:

1. Types and uses of asbestos and identification of the material;
2. The nature of asbestos-related diseases and routes of exposure;
3. Applicable federal and state regulations regarding asbestos;
4. Proper techniques for cutting and removing asbestos-cement pipe, including a review of Proper use of respirator/PPE;
5. Pipe cutting demonstration(s) and pipe wrapping hands-on activity;
6. Proper final visual inspection and waste disposal procedures; and
7. Review of MassDEP's related reporting forms.

(c) Refresher Training within five years shall be ½ day (four hours) in duration. There is no grace period.

(d) Written multiple choice exam of 25 question with a passing grade of 70% or above for initial and refresher training.

28.06: Certification and Other Requirements for Asbestos Analytical Services

(1) Scope of Services. Businesses or persons who provide, engage in or work at the business of providing Asbestos Analytical Services must be duly certified pursuant to 454 CMR 28.06 prior to engaging in such work and must otherwise comply with the requirements of 454 CMR 28.06. Certified Asbestos Analytical Services may only engage in and provide those services for which they are certified. Separate certification is granted for each class of Asbestos Analytical Service, as set forth at 454 CMR 28.06(2)(a) through (d).

(2) Applicants for certification as providers of Asbestos Analytical Services shall receive separate approval to provide the services listed at 454 CMR 28.06(2)(a) through (d).

(a) Class A Certification holders shall be authorized to use polarized light microscopy (PLM) for the analysis of bulk asbestos samples originating in all facilities and locations subject to the requirements of 454 CMR 28.00, including school buildings and other facilities subject to the requirements of MA AHERA 454 CMR 28.13.

28.06: continued

(b) Class B Certification holders shall be authorized to use polarized light microscopy (PLM) for the analysis of bulk asbestos samples originating in all facilities and locations subject to the requirements of 454 CMR 28.00, except school buildings and other facilities subject to the requirements of MA AHERA 454 CMR 28.13.

(c) Class C Certification holders shall be authorized to use phase contrast microscopy (PCM) for the analysis of air samples originating in all facilities and locations subject to the requirements of 454 CMR 28.00, including school buildings and other facilities subject to the requirements of MA AHERA 454 CMR 28.13.

(d) Class D Certification holders shall be authorized to use transmission electron microscopy (TEM) for the analysis of air and bulk asbestos samples originating in all facilities and locations subject to the requirements of 454 CMR 28.00, including school buildings and other facilities subject to the requirements of MA AHERA 454 CMR 28.13.

(3) Application for Certification as a Provider of Asbestos Analytical Services. Applicants for certification as providers of Analytical Services shall submit the following to the Director:

(a) A completed application form with attachments as prescribed by the Director, which shall, at a minimum, include the following:

1. A list of all names, acronyms or other identifiers by which the applicant does or has done business, and the address(es) and telephone number(s) of the business.
2. The type(s) of approval/certification listed at 454 CMR 28.06(2)(a) through (d) for which the applicant is applying.
3. A list of the states in which the applicant holds, or has held, a license or certification, accreditation, or other approval for Asbestos Analytical Services.
4. Corporate Articles of Organization and a Certificate of Good Standing issued by the Massachusetts Secretary of the Commonwealth or a business certificate, if applicable, for the Asbestos Analytical Service of the applicant issued by the city or town where the business is located.
5. A certified and notarized statement by a Responsible Person of the applicant that the applicant has paid all tax obligations current and due to the Commonwealth as of the date of application.
6. A certificate of insurance or a letter of binder from an insurance carrier indicating that the work to be performed by the applicant is covered by a current workers' compensation policy or self-insurance program acceptable to the Commonwealth or a notarized statement that the Asbestos Analytical Service has no employees.
7. A list of all citations or notices of violation relating to occupational health and safety and environmental protection, including notices of noncompliance, notices of responsibility, notices of intent to assess an administrative penalty, orders, consent orders and court judgments, received by the Responsible Persons of the applicant in the five years prior to the date of application, and the issuing agency or department and final disposition of such citation or notice.
8. A list of the names and addresses of all persons designated as Asbestos Analytical Service Supervisors of the Asbestos Analytical Service pursuant to 454 CMR 28.06(4)(a) and (b).
9. A listing of all Responsible Persons and employees of the applicant who will be performing asbestos analysis.
10. Legible copies of certificates of training or other training records for all persons listed at 454 CMR 28.06(3)(a)8., indicating that each such person has fulfilled the applicable asbestos analytical training required by 454 CMR 28.06(5)(d).

(b) A copy of the laboratory standard operating procedures manual for asbestos analysis performed by the applicant, which shall minimally include:

1. Copies of all applicable analytical protocols and procedures referenced at 454 CMR 28.06(6);
2. An inventory of the analytical equipment used by the applicant, with a description of associated equipment calibration and maintenance procedures and schedules;
3. A description of chain of custody procedures, including handling, storage and disposal procedures for asbestos samples; and
4. A description of the quality control procedures and programs utilized by the applicant.

28.06: continued

(c) Results indicating proficiency in the two most recent rounds of the applicable quality control program(s) required by 454 CMR 28.06(5). Documentation shall be in the form of legible copies of official correspondence or certificates from the provider of the applicable quality control program. Applicants from within the Commonwealth seeking Certification as Class B or Class C Analytical Service Provider may submit the single most recent quality control round result, but their Certification and approval pursuant to 454 CMR 28.06(2) may be contingent upon the results of a laboratory inspection at the discretion of the Director.

(d) A fee payable to the Commonwealth of Massachusetts in the amount of the entire annual fee established for such Certification by M.G.L. c. 7, § 3B, plus any applicable surcharges. An applicant that is concomitantly applying for a Certification as an Asbestos Consulting Firm pursuant to 454 CMR 28.07 need only pay one fee. A schedule of asbestos and lead licensing fees and surcharges is available from any Department office upon request. If the Director denies, revokes, suspends or refuses to renew a Certification for reasons specified in 454 CMR 28.16, the fee payment is not refundable.

(e) Such other information as the Director may reasonably require.

(4) Renewal of an Asbestos Analytical Service Certification. A Certification issued by the Department to an Analytical Service Provider is valid for a period of one year. The Director may renew an Asbestos Analytical Service Certification upon written application for renewal by the Certification holder. Renewal applications should be submitted to the Department no later than 30 calendar days before the expiration of the current Certification. The submission of a renewal application later than 30 days before the expiration of the current Certification may result in renewal after the expiration of the current Certification. Said application for renewal shall include submission of the items referenced at 454 CMR 28.06(3)(a) through (e).

Applicants may submit application for renewal at Department's website for renewal with the following provisions of 454 CMR 28.06(4):

(a) Applicant may submit readable electronic versions of updated materials in *lieu* of printed materials.

(b) Application for renewal must be received at least 14 days prior, but not more than 30 days in advance, to allow for processing.

(5) Operating Requirements for Analytical Service Provider. Because of the highly diversified, technical nature of asbestos analysis, comprehensive requirements for the conduct of the work are not set forth in 454 CMR 28.00. Certified providers of Analytical Services shall conduct asbestos analytical work in accordance with officially recognized methodologies and generally accepted industrial hygiene laboratory practices. Providers of Analytical Services shall minimally adhere to the following operating requirements, as a condition of certification:

(a) Designation of Asbestos Analytical Service Supervisor. Applicants for certification as providers of Analytical Services shall designate a qualified Asbestos Analytical Service Supervisor, who shall be jointly responsible with other Responsible Persons of the Certified Asbestos Analytical Service, if any, for the adherence to the applicable analytical protocols, the maintenance of proper quality control procedures and the accuracy of the analytical results.

(b) Use of Personnel. The Asbestos Analytical Service Supervisor and the Responsible Persons of the Certified Asbestos Analytical Service shall ensure that no person shall perform, or be directed to perform, any asbestos analysis in the direct business interest of an Asbestos Analytical Service, unless that person is a Responsible Person or an employee of said Asbestos Analytical Service.

(c) Possession of Adequate Equipment and Supplies. Analytical Service Provider shall possess all equipment and supplies necessary to perform the services offered. Equipment shall be calibrated and maintained as specified by the analytical protocols used or generally accepted industrial hygiene practices.

(d) Training. All employees and Responsible Persons of an Asbestos Analytical Service who perform any asbestos analysis shall have successfully completed appropriate training, as specified at 454 CMR 28.05(4)(d)1. through 3.:

1. Training Requirements for Class A and Class B Certification. All employees and Responsible Persons of Class A and Class B Analytical Service Provider shall have successfully completed an approved course of training in the techniques and procedures for identification of asbestos in bulk samples (*e.g.*, McCrone Research Institute Asbestos Bulk Analysis course, or an equivalent course acceptable to the Director).

28.06: continued

2. Training Requirements for Class C Certificates. All employees and Responsible Persons of Class C Analytical Service Provider shall have successfully completed the NIOSH #582 Course, "Sampling and Evaluating Airborne Asbestos" or an equivalent course acceptable to the Director.

3. Training Requirements for Class D Certificates. All employees and Responsible Persons of Class D Analytical Service Provider shall have successfully completed an approved course of training in the techniques and procedures for identification of asbestos in air samples using TEM (*e.g.*, McCrone Research Institute Asbestos Analysis by Transmission Electronic Microscopy course), or an equivalent course acceptable to the Director.

(6) Required Participation in Quality Control Testing Programs. All Certified Analytical Service Providers shall participate and maintain proficiency or accreditation in official quality control testing programs, as specified at 454 CMR 28.06(5)(a) through (d):

(a) Certified Class A Analytical Service Provider shall maintain accredited status in the National Voluntary Laboratory Accreditation Program of the NIST.

(b) Certified Class B Analytical Service Provider shall:

1. Maintain accredited status in the National Voluntary Laboratory Accreditation Program of the NIST; or

2. Maintain proficiency in the Bulk Asbestos Quality Assurance Program of the American Industrial Hygiene Association or in an equivalent quality assurance program acceptable to the Director.

(c) Certified Class C Analytical Service Provider shall:

1. Participate and maintain proficiency in the Proficiency Analytical Testing (PAT) Program of the American Industrial Hygiene Association; and one of the following:

2. Effective January 1, 2022 all analysts performing such testing for said analytical service are listed in the Asbestos Analysts Registry (AAR) of the American Industrial Hygiene Association and maintain proficiency in the Asbestos Analysis Testing (AAT) Program of the American Industrial Hygiene Association (AIHA);

3. All analysts performing such testing for said analytical service participate in an annual Department provided Asbestos Analyst Testing Program; or

4. AIHA IHLAP accreditation for PCM.

(d) Certified Class D Analytical Service Provider shall maintain accredited status in "Airborne Asbestos Fiber Analysis" in the National Voluntary Laboratory Accreditation Program (NVLAP) of the NIST.

(7) Required Use of Official Analytical Protocols. In performing asbestos analysis, Certified Analytical Service Provider shall use official protocols, as set forth at 454 CMR 28.06(6)(a) through (c):

(a) Certified Class A and Class B Analytical Service Provider shall use the "Interim Method for the Determination of Asbestos in Bulk Insulation Samples" found at 40 CFR Part 763, Appendix A through Subpart F (cannot be used to analyze non-friable organically bound materials) or the "Method for the Determination of Asbestos in Bulk Building Materials" (EPA/600/R-93/116) for the analysis of bulk asbestos samples by polarizing light microscopy.

(b) Certified Class C Analytical Service Provider shall use the NIOSH Method 7400 for the determination of asbestos in clearance air monitoring samples and air samples collected to assess environmental asbestos exposures. Analytical services may use either the NIOSH Method 7400 or the OSHA Reference Method (29 CFR Part 1910.1001, Appendix A, 51 FR No. 119, 22739, June 20, 1986) for the analysis of personal air monitoring samples.

(c) Certified Class D Analytical Service Provider shall use the "Interim Transmission Electron Microscopy Methods - Mandatory and Nonmandatory - and Mandatory Section to Determine Completion of Response Actions", referenced at 40 CFR Part 763, Appendix A, for airborne asbestos analysis by TEM.

(8) Requirement to Maintain Records. Analytical Service Provider shall maintain records, as provided by 454 CMR 28.15.

(9) Requirement for Microscope Calibration When NIOSH Method 7400 is Used. Where the NIOSH Method 7400 is used for the determination of asbestos in air samples, the alignment of the microscope utilized for the analysis shall be checked and adjusted if necessary and the phase shift detection limit ascertained as specified in the Method.

28.06: continued

(a) These checks shall be carried out at least daily each day analysis is performed or each time the microscope is moved to a new location, whichever is more frequent.
(b) A centering telescope for the microscope being used and an HSE/NPL phase contest test slide shall be available at the location where the analysis is being carried out.
(c) Maintain as part of the laboratory quality assurance program a set of reference slides to be used on a daily basis, per the 7400 Method item 12(A), and estimate the laboratory intra- and inter-microscopist precision, per 12(B). Reference slides shall be changed as often as necessary to ensure that the analyst does not become accustomed to the slides.
(d) Perform blind recounts by the same microscopist on 10% of filters counted (slides relabeled by a person other than the microscopist) using the appropriate calculation to determine whether a pair of counts by the same microscopist on the same filter shall be rejected, per 7400 Method item14.
(e) Records of all calibration procedures listed under 454 CMR 28.06(8) shall be maintained as records, as provided by 454 CMR 28.06(8), as well as records of all repairs and maintenance of the microscope.

(10) Maintenance, Submission and Retention of Records. Analytical Service Providers, shall maintain the records as indicated at 454 CMR 28.06(10)(b) through (d) and make said records available to the Director upon request. Entities shall provide photocopies of such records or documents within ten business days of receipt of a written request from the Director. Records and documents required to be kept by 454 CMR 28.06 shall be retained for a period of 30 years from the date of project or activity completion. Entities or persons ceasing to do business, or relocating the principal place of business shall so notify the Director in writing within 30 days of such event. The Director, on receipt of such notification may instruct that the records be surrendered to the Department, or may specify a repository for such records. The entity or person shall comply with the Director's instructions within 60 days.

Certified Analytical Service Provider shall maintain the following records at the principal place of business:

(a) Copies of all documents required for Certification pursuant to 454 CMR 28.06, including quality control results.
(b) Records of all analyses performed, including the identity of the sender, the field identification number, the laboratory identification number, the date collected, the location from which the sample was collected, the method used and the analytical results. Air sample results shall include the start and end times of the sample collection, the start and end flow rates and the sample volume.
(c) Names, addresses, telephone numbers and training documents of each person who performed asbestos analysis for the Certified Asbestos Analytical Service, with the dates of employment or utilization.
(d) Records of field and bench microscope calibrations as prescribed at 454 CMR 28.06(9).

28.07: Certification of Consulting Service Providers and Individual Asbestos Consultants

(1) Scope of Certification of Asbestos Consulting Service Providers. Firms, corporations, businesses or entities performing Asbestos Consulting functions listed in 454 CMR 28.07(5)(a)1. through 4. shall be Certified prior to engaging in such services. A Certificate issued by the Department to a provider of Asbestos Consulting Services is valid for a period of one year.

(2) Asbestos Consulting Service Providers must ensure employees have required current training and appropriate licenses pursuant to 454 CMR 28.07(5)(b)1. through 4. prior to engaging in those services.

(3) Applicants for Certification as providers of Asbestos Consulting Services shall submit the following to the Director:

(a) A completed application form with attachments as prescribed by the Director which shall, at a minimum, include the following:

1. A list of all names, acronyms or other identifiers by which the applicant does or has done business, and the address(es) and telephone number(s) of the business(es).
2. A list of the states in which the applicant holds, or has held, a license or certification, accreditation, or other approval for Asbestos Consulting Services.

28.07: continued

3. A list of the consultant disciplines listed at 454 CMR 28.07(5)(a)1. through 4. for which the applicant seeks approval to provide asbestos consulting services.

4. Corporate Articles of Organization and a Certificate of Good Standing issued by the Massachusetts Secretary of the Commonwealth or a business certificate, if applicable, for the Asbestos Consulting Service of the applicant issued by the city or town where the business is located.

5. A list of the names and addresses of all Responsible Persons and managers of the applicant who have primary responsibility for, and control over, Asbestos Consulting Work of the applicant.

6. A certified and notarized statement by a Responsible Person of the applicant that the applicant has paid all tax obligations current and due to the Commonwealth, including any applicable Unemployment Insurance payments, as of the date of application.

7. A certificate of insurance or a letter of binder from an insurance carrier indicating that the work to be performed by the applicant is covered by a current workers' compensation policy or self-insurance program acceptable to the Commonwealth or a notarized statement that the Asbestos Consulting Service has no employees.

8. A list of all citations or notices of violation relating to occupational safety and environmental protection, including notices of noncompliance, notices of responsibility, notices of intent to assess an administrative penalty, orders, consent orders and court judgements, received by the Responsible Persons of the applicant in the five years prior to the date of application, and the issuing agency or department and final disposition of such citation or notice.

9. A copy of the standard operating procedures to be used by the applicant in the performance of consulting activities.

(b) Legible copies of asbestos training certificates which document that a Responsible Person or manager of the applicant listed pursuant to 454 CMR 28.07(3)(a)5. has successfully completed the applicable initial and refresher training requirements for the Asbestos Consultant disciplines specified at 454 CMR 28.07(5)(b)1. through 4. in which the applicant intends to offer Asbestos Consulting Services. The Director may, at his or her discretion, require the applicant to produce further evidence of fulfillment of the training requirements of 454 CMR 28.07(3)(b).

(c) A fee payable to the Commonwealth of Massachusetts in the amount of the entire annual fee established for such Certification by M.G.L. c. 7, § 3B, plus any applicable surcharges. An applicant that is simultaneously applying for a Certification as an Asbestos Analytical Service pursuant to 454 CMR 28.07 need only pay one fee. Single proprietorships and partnerships who have no employees are exempted from paying a fee for Licensure as an Asbestos Consulting Service. If the Director denies, revokes, suspends or refuses to renew a license for reasons specified in 454 CMR 28.15, the fee payment is not refundable.

(d) Such other information as the Director may reasonably require.

(4) Renewal of an Asbestos Consulting Service Certification. The Director may renew an Asbestos Consulting Service Certification upon written application for renewal by the Certification holder. Renewal applications should be submitted to the Department no later than 30 calendar days before the expiration of the current Certificate. The submission of a renewal application later than 30 days before the expiration of the current Certificate may result in renewal after the expiration of the current Certificate. Said application for renewal shall include submission of the items referenced at 454 CMR 28.07(3)(a)1. through 9. The application may be made electronically at the Department's website or be mailed to the Department.

(5) Licensure of Asbestos Consultants.

(a) Scope of Licenses. Persons performing the Asbestos Consulting functions listed in 454 CMR 28.07(5)(a)1. through 4. shall be licensed in the appropriate discipline prior to engaging in such work. Persons performing the work of more than one Asbestos Consultant discipline shall be separately licensed, except that a person who is licensed as an Asbestos Management Planner may perform the functions of an Asbestos Inspector without being separately licensed.

28.07: continued

1. Asbestos Inspector. Licensure as an Asbestos Inspector authorizes the consultant to review building records, perform visual inspections, collect samples, prepare written inventories and conduct other forms of investigation necessary to determine and document the presence and condition of known or suspect ACM in facilities. Licensed Asbestos Inspectors shall apply current concepts and state of the art knowledge to evaluate the conditions and accessibility of ACM and shall otherwise conduct their activities according to procedures described in 454 CMR 28.00 and current EPA guidance documents or applicable federal laws or rules and regulations.

2. Asbestos Management Planner. Licensure as an Asbestos Management Planner authorizes the consultant to utilize information developed from facility inspections to assess potential hazards of ACM and to select and recommend asbestos hazard control and response actions.

3. Asbestos Project Designer. Licensure as an Asbestos Project Designer authorizes the consultant to design Asbestos Response Actions through preparation of job specifications, bidding documents, architectural drawings and schematic representations of material locations. Except as mandated by AHERA for Asbestos Response Actions conducted in school facilities, the preparation of asbestos project designs is recommended, but not required by 454 CMR 28.00. Where asbestos project designs are prepared, such preparation shall only be performed by persons licensed as Asbestos Project Designers pursuant to 454 CMR 28.07.

4. Asbestos Project Monitor. Licensure as an Asbestos Project Monitor authorizes the consultant to function as the on-site representative of the facility owner or other persons, interpret project specifications or asbestos management plans and monitor and evaluate contractor or employee compliance with applicable rules, regulations, or specifications, including the collection of air samples and to conduct clearance inspections at Asbestos Project sites. Licensure as an Asbestos Project Monitor or any other Asbestos Consultant discipline is not required for persons collecting only (asbestos) personal air monitoring samples.

(b) Qualifications for Licensure. Asbestos Consultants must possess the applicable prerequisites for Licensure listed at 454 CMR 28.07(4)(b)1. through 4.

1. Asbestos Inspectors. Applicants must have successfully completed the training requirements set forth at 454 CMR 28.05(4)(c) and must have, at a minimum:

a. A high school diploma and a minimum of six months experience in an occupation comparable to that of asbestos inspection or two months field experience under the direct supervision of a licensed Asbestos Inspector or Management Planner on no fewer than 15 inspections; or

b. A combination of education and experience equivalent to that set forth in 454 CMR 28.07(5)(b)1.a., as determined by the Director.

2. Asbestos Management Planners. Applicants must have successfully completed the training requirements set forth at 454 CMR 28.05(4)(d) and must have, at a minimum:

a. An associate degree or certificate in project planning, management, environmental sciences, engineering, construction, architecture, industrial hygiene, occupational health, or a related scientific field; and

b. Six months experience in the asbestos abatement field, including experience in asbestos management planning; or

c. A combination of education and experience equivalent to that set forth in 454 CMR 28.07(5)(b)2.a. and b., as determined by the Director.

3. Asbestos Project Designers. Applicants must have successfully completed the training requirements set forth at 454 CMR 28.05(4)(e) and must have, at a minimum:

a. A bachelor's degree in industrial hygiene, occupational health, or environmental, biological or physical science;

b. Current status as a registered architect or engineer with a minimum of 12 months experience in asbestos abatement fields; or

c. A combination of education and experience equivalent to that set forth in 454 CMR 28.07(5)(b)3.a. and b., as determined by the Director.

4. Asbestos Project Monitors. Applicants must have successfully completed the training requirements set forth at 454 CMR 28.05(4)(f) and must have, at a minimum:

a. Two years of college credit or an associate or technical degree or equivalent;

28.07: continued

b. Two years of experience in the asbestos abatement field may be used to substitute for college credit requirement above;

c. Field experience in performing project monitoring work under the direct supervision of a licensed Asbestos Project Monitor on no fewer than 15 Asbestos Response Actions occurring over a period of at least two months; or

d. A combination of education and experience equivalent to that set forth in 454 CMR 28.07(5)(b)4.a. and b., as determined by the Director.

(c) Application for Licensure as an Asbestos Consultant. Applicants for Licensure in one or more of the consultant disciplines must submit the following:

1. A completed application form with attachments as prescribed by the Director.

2. Proof of Age and Identification. A list of acceptable forms of identification is available from any Department office upon request.

3. Asbestos training certificates indicating that the applicant has successfully completed the applicable initial and refresher training requirements specified by 454 CMR 28.05(2), (4)(c) through (f), or (5). Where the Department or the asbestos licensing agency of another state has previously licensed the applicant in the applicable discipline, only those certificates for training that has been received since the effective date of the most recently issued Asbestos Consultant License need be presented. Legible copies of asbestos training certificates may be presented as evidence of successful completion of the required training, except that the training certificate for the most recently received training must be an original. DLS License cards must be presented as documentation of past Licensure. The Director may, at his or her discretion, require the applicant to produce further evidence of having fulfilled the applicable training or Licensing requirements of 454 CMR 28.07(5)(b)1. through 4.

4. Documentation of fulfillment of applicable experience requirements, as set forth in 454 CMR 6.07(5)(b)1. through 4.

5. A list of all citations or notices of violation relating to occupational health and safety and environmental protection, including notices of noncompliance, notices of responsibility, notices of intent to assess an administrative penalty, orders, consent orders and court judgments, received by the applicant in the five years prior to the date of application, and the issuing agency or department and final disposition of such citation or notice.

6. Such other information as the Director may reasonably require.

7. A fee payable to the Commonwealth of Massachusetts in the amount of the entire annual fee established for such certificate by M.G.L. c. 7, § 3B, plus any applicable surcharges. A schedule of asbestos and lead licensing fees and surcharges is available from any Department office upon request. A person applying for Licensure as an Asbestos Inspector and as an Asbestos Management Planner at the same time need pay only one fee. If the Director denies, revokes, suspends or refuses to renew a license for reasons specified in 454 CMR 28.16, the fee payment is not refundable.

(d) Renewal of an Asbestos Consultant License. An Asbestos Consultant license is valid for a period of one year. The Director may renew an Asbestos Consultant license, provided the current license holder makes written application for renewal or files for renewal electronically from the DLS webpage. Application for renewal should be made no later than seven calendar days before the expiration of the current license. The submission of a renewal application later than seven days before the expiration of the current license may result in renewal after the expiration of the current license. Said application for renewal must include submission of the items referenced at 454 CMR 28.07(5)(c)1. through 7., including a current certificate of refresher training in the discipline for which Licensure is sought, as specified at 454 CMR 28.05(5).

28.07: continued

(6) Delivery of Services by Certified Asbestos Consulting Service Providers and Asbestos Consultants.

(a) Requirement for Use of State-of-the-art Consultative Practices. Because of the highly diversified, technical nature of Asbestos Consulting Work, comprehensive requirements for the conduct of this work are not set forth in 454 CMR 28.00. Certified Asbestos Consulting Service Providers and Asbestos Consultants must ensure that the functions authorized at 454 CMR 28.07(1)(a)1. through 5., as applicable, are performed in accordance with the requirements of 454 CMR 28.00, applicable EPA asbestos standards and protocols, including 40 CFR Part 763, Subpart E, other applicable federal standards and in accordance with professional standards generally recognized as "state of the art" or "best practices" by the Asbestos Consulting industry and asbestos professional associations, and in accordance with current practices taught by Certified Training Providers. The Department has final determination as to what constitutes "State-of-the-art".

(b) Requirement for Signing Entry/Exit Logs at Asbestos Response Action Worksites. Asbestos Consultants who enter the Work Area of an Asbestos Response Action must make the entries in the sign-in/out log specified at 454 CMR 28.10(4)(a)2. as a condition of Licensure.

(7) Maintenance, Submission and Retention of Records. Asbestos Consulting Service Providers, must maintain the records as indicated at 454 CMR 28.06(8) and make said records available to the Director upon request. Entities must provide photocopies of such records or documents within ten business days of receipt of a written request from the Director. Records and documents required to be kept by 454 CMR 28.15 must be retained for a period of 30 years from the date of project or activity completion. Entities or persons ceasing to do business, or relocating the principal place of business must so notify the Director in writing within 30 days of such event. The Director, on receipt of such notification may instruct that the records be surrendered to the Department, or may specify a repository for such records. The entity or person must comply with the Director's instructions within 60 days.

(8) Certified Asbestos Consulting Service Providers must maintain the following records at the principal place of business:

(a) Copies of all documents required for Certification pursuant to 454 CMR 28.07.

(b) Records of all recommendations provided, records of services including sampling times and locations, asbestos air and bulk sampling, including the date collected, the location from which the sample was collected, the method used and the analytical results. Air sample results must include the start and end times of the sample collection, the flow rate, volume of air collected and the sample locations and including the identity of the sender, and the laboratory identification number providing analysis.

(c) Names, license number and expiration, addresses, telephone numbers and training documents of each person who performed asbestos consultation for the Certified Asbestos Consultation Services, with the dates of employment or utilization.

28.08: Certification of Asbestos Contractors and Licensure of Asbestos Supervisors and Workers

No business, firm, corporation, person or other entity shall enter into, engage in or work at the business of Asbestos Abatement unless such business, firm corporation, person or other entity has been duly certified (business) and licensed (individual) in accordance with 454 CMR 28.08. All persons who perform the functions of Asbestos Workers, Asbestos Supervisors, or Asbestos Contractors at worksites where Asbestos Response Actions are carried out must be licensed pursuant to 454 CMR 28.08 and possess current training certification in the discipline authorized.

All certifications and licenses under 454 CMR 28.08 shall be valid for a period of one year.

(1) Application for Certification. Applicants for Certification as Asbestos Contractors (business) must submit the following to the Director:

(a) A completed application form with attachments as prescribed by the Director, which must, at a minimum, include the following:

1. A list of all names, acronyms or other identifiers by which the applicant does or has done business, the address(es) and telephone number(s) of the business.

28.08: continued

2. A list of the states in which the applicant holds, or has held, a license or certification, accreditation, or other approval for Asbestos Work.

3. A list of the names and addresses of all Asbestos Abatement firms or entities in which the Responsible Persons of the applicant have or have had a financial interest or management responsibility.

4. Corporate Articles of Organization and a Certificate of Good Standing issued by the Massachusetts Secretary of the Commonwealth or a business certificate, if applicable, for the asbestos contracting firm of the applicant issued by the city or town where the business is located.

5. A certified and notarized statement by a Responsible Person of the applicant that the applicant has paid all tax obligations current and due to the Commonwealth, including any applicable Unemployment Insurance payments, as of the date of application.

6. A certificate of insurance or a letter of binder from an insurance carrier indicating that the Asbestos Work to be performed by the applicant is covered by a current workers' compensation policy or self-insurance program acceptable to the Commonwealth or a notarized statement that the contractor has no employees. Certificates of Insurance and letters of binder must indicate that the applicant has coverage under Workers Compensation Classification Codes 5472 or 5473.

7. A list of all citations or notices of violation relating to occupational health and safety and environmental protection, including notices of noncompliance, notices of responsibility, notices of intent to assess an administrative penalty, orders, consent orders and court judgments, received by the Responsible Persons of the applicant in the five years prior to the date of application, and the issuing agency or department and final disposition of such citation or notice.

8. A statement made under the penalties of perjury by a Responsible Person of the applicant that all employees to be engaged in Asbestos Work are licensed, or will be licensed prior to any work being performed by them, pursuant to the requirements of 454 CMR 28.00.

9. A list of the names and addresses of all Responsible Persons and managers of the applicant who have primary responsibility for, and control over, Asbestos Work of the applicant.

10. A respiratory protection and worker health and safety program evidencing compliance with 29 CFR Part 1910.134.

11. Written procedures for complying with OSHA or EPA personal and medical monitoring requirements.

(b) Asbestos training certificates indicating that a Responsible Person or manager of the applicant asbestos contractor business listed pursuant to 454 CMR 28.08(1)(a)9. has successfully completed the applicable initial and refresher training requirements for Asbestos Supervisors specified by 454 CMR 28.05(4)(b) or (5). Where an applicant has previously been issued an Asbestos Supervisor License or Training Certification, only those certificates for training that have been received by the Responsible Person since the effective date of the most recently issued Asbestos Contractor Business Certification need be presented. Legible copies of asbestos training certificates may be presented as evidence of successful completion of the required training, except that the training certificate for the most recently received training must be an original. The Director may, at his or her discretion, require the applicant to produce further evidence of having fulfilled the applicable training or Licensure requirements of this subsection, 454 CMR 28.05(4)(b) or (5).

(c) Such other information as the Director may reasonably require.

(d) A fee payable to the Commonwealth of Massachusetts in the amount of the entire annual fee established for such license by M.G.L. c. 7, § 3B, plus any applicable surcharges. A schedule of asbestos and lead licensing fees and surcharges is available from any Department office upon request or the Department's website. If the Director denies, revokes, suspends or refuses to renew a certificate for reasons specified in 454 CMR 28.16, the fee payment is not refundable.

28.08: continued

(2) Renewal of an Asbestos Contractor Certificate. The Director may renew an Asbestos Contractor Certificate upon written application for renewal by the license holder. Renewal applications should be submitted to the Department no later than 30 calendar days before the expiration of the current license. The submission of a renewal application later than 30 days before the expiration of the current certificate may result in renewal after the expiration of the current license. Said application for renewal must include submission of the items referenced at 454 CMR 28.08(1)(a) through (d), including a current certificate of training indicating that a Responsible Person or manager of the applicant listed pursuant to 454 CMR 28.05(4)(b) has successfully completed the refresher training requirements for Asbestos Supervisors specified by 454 CMR 28.05(5). Applications may also be filed online on the Department's website.

(3) Licensure of Asbestos Workers and Asbestos Supervisors.

(a) Application for Licensure as an Asbestos Worker. Applicants for Licensure as Asbestos Workers must submit the following:

1. A completed application form with attachments as prescribed by the Director.
2. Proof of Age and Identification. A list of acceptable forms of identification is available from any Department office upon request.
3. Asbestos training certificates indicating that the applicant has successfully completed the applicable initial and refresher training requirements specified by 454 CMR 28.05(4)(a) or (5). Where an applicant has previously been issued an Asbestos Worker License by the Department or the asbestos licensing agency of another state, only those certificates for training that has been received since the effective date of the most recently issued Asbestos Worker License need be presented. Legible copies of asbestos training certificates may be presented as evidence of successful completion of the required training, except that the training certificate for the most recently received training must be an original. License cards must be presented as documentation of past Licensure. The Director may, at his or her discretion, require the applicant to produce further evidence of having fulfilled the applicable training or Licensing requirements of 454 CMR 28.08(3)(a)3., 28.05(4)(a) or 28.05(5).
4. A list of all citations or notices of violation relating to occupational health and safety and environmental protection, including notices of noncompliance, notices of responsibility, notices of intent to assess an administrative penalty, orders, consent orders and court judgments, received by the applicant in the five years prior to the date of application, and the issuing agency or department and final disposition of such citation or notice.
5. Such other information as the Director may reasonably require.
6. A fee payable to the Commonwealth of Massachusetts in the amount of the entire annual fee established for such certificate by M.G.L. c. 7, § 3B, plus any applicable surcharges. A schedule of asbestos and lead licensing fees and surcharges is available from any Department office upon request and at the Department's website. If the Director denies, revokes, suspends or refuses to renew a license for reasons specified in 454 CMR 28.16, the fee payment is not refundable.

(b) Renewal of an Asbestos Worker License. An Asbestos Worker license is valid for a period of one year. The Director may renew an Asbestos Worker license, provided the current license holder makes written application for renewal. Application for renewal should be made no later than seven calendar days before the expiration of the current license. The submission of a renewal application later than seven days before the expiration of the current license may result in renewal after the expiration of the current license. Said application for renewal must include submission of the items referenced at 454 CMR 28.08(3)(a)1. through 6., including a current certificate of refresher training specified by 454 CMR 28.05(5).

(c) Application for Licensure as an Asbestos Supervisor. In accordance with policies of the EPA set forth pursuant to 40 CFR Part 763, Subpart E, Asbestos Supervisors must be fluent in written and spoken English as a condition of Licensure. Applicants for Licensure as Asbestos Supervisors must submit the following:

1. A completed application form with attachments as prescribed by the Director.
2. Proof of Age and Identification. A list of acceptable forms of identification is available from any Department office upon request.

28.08: continued

3. Asbestos training certificates indicating that the applicant has successfully completed the applicable initial and refresher training requirements specified by 454 CMR 28.05(4)(b), or 454 CMR 28.05(5). Where an applicant has previously been issued an Asbestos Supervisor Certificate by the Department or the asbestos licensing agency of another state, only those certificates for training that have been received since the effective date of the most recently issued Asbestos Supervisor License need be presented. Legible copies of asbestos training certificates may be presented as evidence of successful completion of the required training, except that the training certificate for the most recently received training must be an original. License cards must be presented as documentation of past Licensure. The Director may, at his or her discretion, require the applicant to produce further evidence of having fulfilled the applicable training or Licensing requirements of 454 CMR 28.08(3)(c)3., 28.05(2), 28.05(4)(b) or 28.05(5).

4. Proof of Licensure as an Asbestos Worker or Asbestos Supervisor for at least six months. License cards must be presented as documentation of past Licensure.

5. A list of all citations or notices of violation relating to occupational health and safety and environmental protection, including notices of noncompliance, notices of responsibility, notices of intent to assess an administrative penalty, orders, consent orders and court judgments, received by the applicant in the five years prior to the date of application, and the issuing agency or department and final disposition of such citation or notice.

6. Such other information as the Director may reasonably require.

7. A fee payable to the Commonwealth of Massachusetts in the amount of the entire annual fee established for such license by M.G.L. c. 7, § 3B, plus any applicable surcharges. A schedule of asbestos and lead licensing fees and surcharges is available from any Department office upon request and at the Department's website. If the Director denies, revokes, suspends or refuses to renew a license for reasons specified in 454 CMR 28.16, the fee payment is not refundable.

(d) Renewal of an Asbestos Supervisor License. An Asbestos Supervisor license is valid for a period of one year. The Director may renew an Asbestos Supervisor license, provided the current license holder makes written application for renewal. Application for renewal should be made no later than seven calendar days before the expiration of the current license. The submission of a renewal application later than seven days before the expiration of the current license may result in renewal after the expiration of the current license. Renewal applications may be submitted electronically at the Department's website or by mail to the Department. Said application for renewal must include submission of the items referenced at 454 CMR 28.08(3)(a) through (e), including a current certificate of refresher training specified by 454 CMR 28.05(5).

(e) Recordkeeping Requirements of Asbestos Contractors and Supervisors.

1. Maintenance, Submission and Retention of Records. Asbestos Contractors shall maintain the records as indicated at 454 CMR 28.08(3)(e)2.a. through k. and make said records available to the Director upon request. Entities shall provide photocopies of such records or documents within ten business days of receipt of a written request from the Director. Records and documents required to be kept by 454 CMR 28.08 shall be retained for a period of 30 years from the date of project or activity completions. Entities or persons ceasing to do business, or relocating the principal place of business shall so notify the Director in writing within 30 days of such event. The Director, on receipt of such notification may instruct that the records be surrendered to the Director, or may specify a repository for such records. The entity or person shall comply with the Director's instructions within 60 days.

2. Central Location. The following records and documents shall be maintained by Asbestos Contractors at the principal place of business:

a. Copies of all written materials required to be submitted for Asbestos Contractor licensure pursuant to 454 CMR 28.08.

b. Certificates of Insurance, or legible copies thereof, documenting the Workers Compensation Insurance coverage carried by the Asbestos Contractor. Certificates of Insurance shall indicate that the applicant has coverage under Workers Compensation Classification Codes 5472 or 5473.

28.08: continued

c. Name, address, telephone number, License number and dates of employment of every Asbestos Worker and Supervisor employed by or included within the corporate structure of the Asbestos Contractor.

d. Copies of all asbestos training certificates required by 454 CMR 28.08(3)(a)3. and 454 CMR 28.08(3)(c)3. for every Asbestos Worker and Supervisor utilized by the Asbestos Contractor to perform Asbestos Work.

e. Copies of all Asbestos Worker and Supervisor License cards issued by the Department pursuant to 454 CMR 28.08 for every Asbestos Worker and Supervisor utilized by the Asbestos Contractor to perform Asbestos Work.

f. All records and documents required by 29 CFR 1910.134 and 1926.1101 and any other applicable federal, state or local law, regulation or ordinance.

g. Copies of all contracts awarded for Asbestos Work.

h. Copies of all notifications made by the Asbestos Contractor pursuant to 454 CMR 28.09.

i. Copies of all asbestos analysis and exposure monitoring reports in the possession of the Asbestos Contractor relating to past or present Asbestos Work, including clearance air monitoring reports required by 454 CMR 28.08(3)(e)3.

j. Receipts and documentation of disposal of asbestos waste, showing dates, locations and amounts of asbestos waste disposed, including the identification of the source of the asbestos waste and the transporter (company name or driver name, if an employee of the contractor).

k. Copies of all records required to be maintained on-site by 454 CMR 28.10(3)(e)3.

3. On-site. The following records and documents shall be maintained by the Asbestos Contractor at the asbestos worksite for the duration of the project:

a. A current copy of 454 CMR 28.00. The copy may be available in readable electronic format.

b. A copy of all contract, project design or technical specifications governing the project in the possession of the Asbestos Contractor.

c. A listing of each of the contractors, sub-contractors and consultants on the project.

d. A legible copy of the Massachusetts License card of each Asbestos Worker and each Asbestos Supervisor utilized by the Asbestos Contractor at the worksite.

e. A legible copy of the current certificate of asbestos training of each Asbestos Worker and each Asbestos Supervisor utilized by the Asbestos Contractor at the worksite.

f. The daily sign in/out log required to be maintained by 454 CMR 28.10(4)(a)2.

g. Records of all on-site air monitoring pertaining to the project in the possession of the Asbestos Contractor.

28.09: Notification of Asbestos Project

An Asbestos Contractor or operator of an Asbestos Abatement must notify the Director before engaging in any such work.

(1) Notification must be on forms jointly prescribed by the Director and the MassDEP.

(2) Notification must be electronically-filed, postmarked or hand-delivered at least ten working days before the project start date or, in the case of an Emergency Project, within one working day after the project start date.

(a) Notification must be cancelled, amended, edited and/or resubmitted if work dates change. Intermittent work notifications may be updated by email or phone to the Department as allowed under 310 CMR 7.15(6)(g)4.

(b) Asbestos Contractors who notify for a project and are found to be working during dates not covered by the notification are in violation.

(c) Asbestos Contractors who notify for a project and are found to NOT be working during dates covered by the notification are in violation.

28.09: continued

(3) Fulfillment of the asbestos project notification requirements of the MassDEP through submission of a completed Notification Form ANF-001 (BWP AQ-04) with the appropriate fee where required, satisfies the notification requirements of 454 CMR 28.09.

(4) Fulfillment of the notification requirements of 454 CMR 28.09 shall not relieve the Asbestos Contractor, operator of the project or facility owner of the responsibility for making written notification as may be required by any other municipality, agency of the Commonwealth, or any agency of the federal government.

28.10: Work Practices and Other Requirements for Asbestos Response Actions

(1) Required Use of Certified Asbestos Contractors. Except as allowed by 454 CMR 28.10(1)(a), only Asbestos Contractors certified pursuant to 454 CMR 28.03(2) and 28.05 shall carry out Asbestos Response Actions.

Exception to Certification Requirement for Entities Conducting Response Actions in their Own Facilities. Persons, firms, corporations or other entities who carry out Asbestos Response Actions at their own property or usual place of business or employment using their own regular employees or Responsible Persons need not be licensed as Asbestos Contractors, provided that the requirements of 454 CMR 28.10(2) and (3) are met, and the work is otherwise conducted in accordance with the applicable requirements of 454 CMR 28.00. Uncertified entities who conduct Response Actions in their own Facilities shall be responsible for complying with the notification requirements of 454 CMR 28.09.

(2) Requirement for On-site Supervisor. The Responsible Persons of the certified Asbestos Contractor or other entity carrying out an Asbestos Response Action must ensure that a licensed Asbestos Supervisor who is an employee or Responsible Person of said Asbestos Contractor or entity is present at the work site and in control of the work at all times when work is in progress.

(3) Requirement for Use of Licensed Asbestos Workers. The Responsible Persons of the certified Asbestos Contractor or other entity carrying out an Asbestos Response Action must ensure that all persons who perform the functions of Asbestos Workers in the Work Area are employees or Responsible Persons of said Asbestos Contractor or entity and that said persons are licensed pursuant to 454 CMR 28.03(3).

(4) Required Work Practices. Asbestos Contractors, Asbestos Supervisors and others carrying out, or having supervisory authority over, Asbestos Response Actions must ensure that the work practice requirements of 454 CMR 28.10 are met.

(a) Work Area Preparation.

1. Exclusion of Persons from the Work Area. All persons not directly involved in the work operation must be excluded from the Work Area.
2. Sign In/Out Log. The Asbestos Contractor or other entity carrying out an Asbestos Response Action must ensure that each person entering or leaving the Work Area individually completes the appropriate entries in a sign-in/out log. The sign in/out log must include: the location of the project; current date; printed name; signed name; Massachusetts License number, where applicable; and the time of each entry or exiting.
3. Posting of Warning Signs. Warning signs meeting the specifications set forth in 29 CFR Part 1926.1101(k)(7) must be posted at all approaches to the Work Area. Signs must be posted a sufficient distance from the Work Area to permit a person to read the sign(s) and take precautionary measures to avoid exposure to asbestos. Signs must be in place from Work Area preparation until final clearance.
4. Shutdown of HVAC Systems. The facility heating, ventilating and air conditioning (HVAC) systems of the Work Area must be shut down, locked out and isolated.
5. Removal of Moveable Objects. All moveable objects must be removed from the Work Area prior to an asbestos response action. Items to be reused which may have been contaminated with asbestos must be decontaminated by HEPA vacuuming or wet cleaning prior to their being removed from the Work Area.

28.10: continued

6. Non-movable Objects. All non-moveable or fixed objects remaining within the Work Area that have not been contaminated with asbestos must be wrapped or covered with six-mil thick (minimum) plastic sheeting. Plastic sheet coverings must be completely sealed with duct tape or equivalent.

7. Isolation of Work Area. The Work Area must be isolated by sealing all openings including, but not limited to, windows, doors, ventilation openings, drains, grilles, and grates with six-mil thick (minimum) plastic sheeting and duct tape or the equivalent. For Asbestos Response Actions performed in Public Facilities, large openings such as open doorways, elevator doors, and passageways must be first sealed with solid construction, such as plywood over studding, which must constitute the outermost boundary of the asbestos Work Area. All cracks, seams and openings in such solid construction must be caulked or otherwise sealed, so as to prevent the movement of asbestos fibers out of the Work Area.

8. Covering of Ceiling, Floor and Wall Surfaces. Except as allowed by 454 CMR 28.10(4)(a)8.a. through c., ceiling, floor and wall surfaces must be covered with plastic sheeting. All seams and joints must be sealed with duct tape or equivalent. Floor covering must consist of at least two layers of six-mil plastic sheeting, with the edges up-turned to cover at least the bottom 12 inches of the adjoining wall(s). Wall and ceiling covering must consist of a minimum of two layers of four-mil plastic sheeting. Wall covering must extend from ceiling to floor and overlap the up-turned floor coverings without protruding onto the floor. Duct tape or equivalent must be used to seal the seams in the plastic sheeting at the wall to floor joints.

a. Exception to Covering Requirement Where Surfaces Are Impervious. Compliance with 454 CMR 28.10(4)(a)8. is optional where these surfaces are covered by ceramic tile or other impervious materials that are free from holes, drains, cracks, fissures or other openings and which may be thoroughly decontaminated by washing at the conclusion of the work, provided that such action does not result in the passage of asbestos fibers from the Work Area.

b. Exception to Covering Requirement for Abatement Surfaces. Compliance with 454 CMR 28.10(4)(a)8. is not required for those floor and wall surfaces from which asbestos coverings are removed.

c. Exception to Wall Surface Covering Requirement Where Glove Bags Are Used. Covering of wall and ceiling surfaces is optional for Asbestos Response Actions where Glove bags are used as the sole means of removal or repair, provided that the Work Area is isolated in accordance with 454 CMR 28.10(4)(a)7., that all moveable objects in the Work Area are removed in accordance with 454 CMR 28.10(4)(a)5., that immoveable objects remaining in the Work Area are covered in accordance with 454 CMR 28.10(4)(a)6. and that all other relevant requirements of 454 CMR 28.10(4)(a)8.b.i. Where Glove bags are used, the floor of the Work Area must be covered with a minimum of one layer of six-mil thick plastic sheeting.

9. GFCI Protection. All sources of electric power for the Work Area must be ground fault circuit interrupter (GFCI) protected.

(b) Use of Decontamination Facilities.

1. Requirement for Use. Asbestos Contractors and others carrying out Asbestos Response Actions must supply and ensure the use of a three-compartment decontamination facility, as prescribed by 29 CFR Part 1926.1101(j)(1). Except as may be required during emergencies which endanger life or health, the decontamination facility must be the sole means through which the isolated work space is accessed while work is in progress.

2. Exception to Decontamination System Requirement for Work Less than 25 Linear/Ten Square Feet. A change room may be used in *lieu* of the three-compartment decontamination facility specified by 454 CMR 28.10(4)(b)1. on projects which involve the disturbance of less than 25 linear feet or less than ten square feet of ACM. Change rooms must be constructed and operated in accordance with OSHA Asbestos Regulations 29 CFR Part 1926.1101(j)(2).

3. Warm Water Required. Warm water must be supplied to the showers of the decontamination facility required by 454 CMR 28.10(4)(b)1.

28.10: continued

4. Decontamination of Personnel Required. No abatement personnel may leave the Work Area without first decontaminating their persons by showering, wet washing or HEPA vacuuming to remove all asbestos debris.

5. Location of Decontamination Facilities. Where feasible, decontamination facilities must be contiguous with the Work Area. Where this is not feasible, the decontamination facility must be sited as closely as possible to the Work Area. Persons using such a remotely-sited decontamination facility must remove visible debris from their persons by HEPA vacuuming prior to donning clean disposable coveralls while still in the Work Area, and then proceed directly to the remote decontamination system to shower and change clothes.

6. Equipment Decontamination. No equipment, supplies, or materials (except properly containerized waste material) must be removed from an asbestos Work Area, unless such equipment, supplies or materials have been thoroughly cleaned free of asbestos debris. Where decontamination is not feasible, such materials must be wrapped in a minimum of two layers of six-mil polyethylene sheeting with all joints, seams and overlaps sealed with tape or containerized in a metal, plastic or fiber drum with a locking lid. Said wrapped equipment, supplies or materials must be labeled as being asbestos-contaminated prior to removal from the Work Area. HEPA vacuums must be emptied of contents prior to removal from the Work Area. Air filtration devices must have used pre-filters and intermediate filters removed and replaced with fresh filters prior to removal from the Work Area. Used HEPA filters, intermediate and pre-filters must be disposed of as asbestos waste.

7. Requirements for Clean Room. A clean area or room (clean room) must be provided with lockers or other appropriate containers for the storage of each worker's clothes and personal items. A trash container for non-contaminated waste must be provided in the clean room and emptied at the end of each work day. The clean room must be maintained in a clean and sanitary condition at all times.

(c) Requirement for Work Area Ventilation System. A HEPA-filtered Work Area ventilation system must be used to maintain a reduced atmospheric pressure of at least -0.02 column inches of water pressure differential within the contained Work Area. The system must be in operation at all times from the commencement of the asbestos project until the requirements of 454 CMR 28.10(11)(a) and (b) have been met. The ventilation equipment utilized must be of sufficient capacity to provide a minimum of four air changes per hour. Ventilation units must be operated in accordance with Appendix J of EPA Guidance Document EPA 560/5 85 024 and 29 CFR Part 1926.1101(g)(5)(i). Make up air entering the Work Area must pass through the decontamination area whenever possible. Exhaust air must be HEPA-filtered before being discharged outside of the Work Area. Exhaust air tubes or ducts associated with the Work Area ventilation system must be free of leaks. Where feasible, exhaust air must be discharged to the outside of the building. If access to the outside is not available, exhaust air may be discharged to an area within the building, but in no case must exhaust air be discharged into occupied areas of the building or into areas of the building which contain exposed or damaged asbestos. When exhaust air is discharged to the interior of a building, the outflow must be sampled and analyzed at least twice per day per machine, using sampling and analysis methods prescribed by the NIOSH Analytical Method 7400 referenced at 40 CFR Part 763, Appendix A. If at any time fiber levels in the exhausted air exceed 0.01 fibers/cc, the work operation must stop immediately, and the corresponding ventilation unit(s) must be shut off and repaired or replaced before the Asbestos Response Action is resumed.

1. Exception to Work Area Ventilation System Requirement for Work Less than 25 Linear/Ten Square Feet. Compliance with 454 CMR 28.10(4)(c) is optional for Asbestos Response Actions which involve the removal, encapsulation or enclosure of 25 or fewer linear feet of asbestos on or in pipes, ducts or wires or ten or fewer square feet of asbestos on or in structures or components other than pipes, ducts or wires.

2. Exception to Work Area Ventilation System Requirement Where Glove Bags Are Used. Compliance with 454 CMR 28.10(4)(c) is optional for Asbestos Response Actions where Glove bags are used as the sole means of removal or repair.

28.10: continued

(d) Work Procedures.

1. Wetting of Asbestos. Prior to removal, ACM must be adequately wetted with Amended Water. Water must not be applied in amounts that will cause run off or leakage of the water from the Work Area. Once removed, ACM must be kept wet until containerized pursuant to 454 CMR 28.10(4)(d)2. and 310 CMR 7.15: *U Asbestos*.

2. Containerization of Asbestos. Removed ACM and asbestos-contaminated debris within the Work Area must be promptly cleaned up and containerized. Containerized ACM must be removed from the Work Area at least once each working shift. Waste not containing components with sharp edges must be containerized in two plastic bags (six-mil minimum thickness each bag, one inside the other) or in metal, plastic or fiber drums with locking lids. ACM with sharp edged components must be contained in leak-proof metal, plastic or plastic-lined, drums or boxes. Large components removed intact must be wrapped in a minimum of two layers of six-mil polyethylene sheeting with all joints and seams sealed with duct tape, and labeled as ACM prior to removal from the contained Work Area.

3. Material Deposition. ACM must not be dropped or thrown from heights greater than 15 feet. Asbestos-containing asphaltic shingles or felts shall not be dropped or thrown to the ground. Unless the material is carried or passed to the ground by hand, it shall be lowered to the ground by crane or hoist or transferred in dust-tight chutes.

4. Enclosure. Where ACM is enclosed during an Asbestos Response Action, the following provisions must also apply:

a. Enclosures over pipes, ducts, tanks, boilers or other objects must be labeled as containing ACM and identified on building records.

b. Enclosure systems must be constructed to be dust tight.

5. Encapsulation. Encapsulants must not be applied to severely damaged or deteriorating ACM.

6. Demolition. The notification provisions 454 CMR 28.09 and the provisions of 454 CMR 28.10 apply to the demolition of any facility containing ACM. Such work must also be performed in conformance with 310 CMR 7.00: *Air Pollution Control*, 310 CMR 19.000: *Solid Waste Management* and 310 CMR 40.000: *Massachusetts Contingency Plan* and the requirements of the EPA National Emission Standard for Asbestos (NESHAP), as contained in 40 CFR Part 61, Subpart M.

7. Abatement of Friable ACM Exposed during Response Action. Any Friable ACM that has been exposed as a result of an Asbestos Response Action must be suitably removed, enclosed or encapsulated in accordance with 454 CMR 28.10(4)(d)4. or 28.10(4)(d)5.

(5) Specific Work Practice Requirements for Glove Bag Operations. Asbestos Contractors and others having supervisory authority over Asbestos Response Actions involving glove bag use must ensure that the following work practice requirements are met:

(a) Glove bags must be used only on those structures or surfaces for which they are specifically designed, and they must be used without modification. Glove bags must be constructed of six-mil thick (minimum) plastic sheeting and be seamless at the bottom.

(b) Glove bags must be used only once and must not be moved along the surface to which they are applied.

(c) Glove bags must not be applied to structures hotter than 150°F, or per manufacturer's specifications.

(d) The Work Area may be isolated in accordance with 454 CMR 28.10(4)(a)7. and must be cleaned of visible debris by wet wiping or HEPA vacuuming prior to installation of the glove bag.

(e) Glove bags must be installed so as to form an airtight covering over the structure to which they are applied, and smoke testing used to validate airtight installation. Any friable ACM in the immediate area of glove bag attachment must be wrapped and sealed in two layers of six-mil plastic sheeting or otherwise rendered intact prior to glove bag installation. Where points of attachment of the glove bag are not intact, they must be rendered intact by wrapping with re-wettable fiberglass cloth, or an equivalent material, prior to attaching the glove bag. All openings in the glove bag must be sealed against leakage with duct tape or equivalent material.

(f) ACM must be wet with Amended Water prior to its removal and maintained in a wet condition inside the glove bag.

28.10: continued

(g) Any ACM that has been exposed as result of the glove bag operation must be suitably removed, encapsulated or enclosed so as to prevent the leakage of asbestos fibers prior to the removal of the glove bag.

(h) All surfaces from which ACM has been removed inside the glove bag and the upper portions of the glove bag itself must be cleaned free of visible debris prior to removal of the glove bag.

(i) Debris must be isolated in the bottom of the glove bag by twisting the bag so as to form a closure in the middle. This closure must then be taped around with duct tape or equivalent material. Air in the glove bag must be exhausted with a HEPA vacuum cleaner prior to its removal.

(j) Following removal from the structure, the glove bag and its contents must be containerized in accordance with 454 CMR 28.10(4)(d)2. and disposed of in accordance with 454 CMR 28.10(8)(a).

(6) Cleanup. Following an Asbestos Response Action, the Asbestos Contractor or entity performing the work must decontaminate all contaminated surfaces within the Work Area using HEPA vacuuming or wet cleaning techniques, including surfaces contaminated prior to the Asbestos Response Action. All equipment and materials used and all surfaces from which ACM has been removed must be decontaminated. If asbestos materials were not substantially intact at time of removal; an inch of soil must be removed from dirt floors and disposed of as asbestos containing waste. All cleanup materials must be disposed of as asbestos waste. Cleanup must be to the level of no visible debris.

(7) Clearance Monitoring. Following the cleanup required by 454 CMR 28.10(6), the facility owner, Asbestos Contractor, entity conducting the Asbestos Response Action, or the Asbestos Project Monitor employed to oversee the work operation must ensure that the clearance monitoring requirements of 454 CMR 28.10(4)(9), (10) and (11) are met. Until these conditions are achieved all Work Area barriers must remain in place, Work Area ventilation systems (if required) will remain in operation, respirators and other personal protective equipment must be worn and all other work practice controls, as required by 454 CMR 28.10(4) must remain in effect.

(8) Disposal Requirements.

(a) Waste. Any ACM and any materials contaminated with ACM that are removed from a facility must be handled and disposed of as an asbestos containing waste in conformance with EPA NESHAPS Regulations at 40 CFR Part 61 and 310 CMR 7.00: *Air Pollution Control* and 310 CMR 19.000: *Solid Waste Management*.

(b) Transport. Only asbestos waste which has been properly containerized pursuant to 454 CMR 28.10(6) may be transported from the point of generation. Transport must be in covered vehicles or locked containers. Transportation of asbestos waste must be in conformance with EPA NESHAP Regulations at 40 CFR Part 61 and applicable standards of the U.S. Department of Transportation, OSHA and the MassDEP.

(9) Clearance Monitoring Procedures. The clearance monitoring procedures specified by 454 CMR 28.10(10) and (11) must be performed only by a licensed Asbestos Project Monitor who is not an employee or Responsible Person of the Asbestos Contractor or entity which conducted the work, and therefore, must be contracted by the facility owner/operator directly, including any Class C Analytical Services providing Project Monitor services. The Asbestos Contractor may not subcontract with an Asbestos Project Monitor, or Asbestos Consulting Service Provider, to perform the visual inspection required by 454 CMR 28.10(10) or the clearance air monitoring required by 454 CMR 28.10(11) for an Asbestos Response Action conducted in a facility subject to the requirements of AHERA.

(10) Visual Inspections. A licensed Asbestos Project Monitor must inspect all surfaces within the Work Area for dust, debris and other particulate residue. Should any Visible Debris be found in the Work Area, it must be repeatedly cleaned by the Asbestos Contractor or entity performing the work in accordance with 454 CMR 28.10(6) until the no visible debris criterion is achieved. Where clearance air monitoring is required by 454 CMR 28.10(11), the achievement of the no visible debris criterion must precede the collection of clearance air monitoring samples.

28.10: continued

(11) Clearance Air Monitoring. The clearance air monitoring requirements of 454 CMR 28.10(11) must be met for all Asbestos Response Actions, except for those involving the complete demolition of facilities, or those conducted in facilities not subject to the requirements of AHERA where the Glove Bag is used as the sole means of removal or repair.

(a) Clearance Air Monitoring Requirements for Larger Asbestos Response Actions Conducted in School Facilities Subject to AHERA. For Asbestos Response Actions conducted in school facilities subject to AHERA which involve the removal, encapsulation or enclosure of greater than 160 square feet or 260 linear feet of friable ACM, clearance air monitoring samples must be collected and analyzed by transmission electron microscopy (TEM) as prescribed by 40 CFR Part 763, Appendix A through Subpart E with analysis by an Asbestos Analytical Service Provider.

1. In addition to adhering to the above, the licensed Asbestos Project Monitor must use a rotameter or other appropriate flow measuring device, the calibration of which is traceable to a primary standard, to measure the air flow in the sampling train immediately prior to and immediately following the collection of the clearance air monitoring samples.

2. Air samples must be collected within a negative pressure enclosure using the aggressive sampling methods described in 40 CFR Part 763, Subpart E, Appendix A.

3. The analysis of all clearance air monitoring samples collected pursuant to the requirements of 454 CMR 28.10(11) must be analyzed by Analytical Service Provider certified and approved pursuant to 454 CMR 28.06.

4. Where clearance air monitoring samples are collected and analyzed pursuant to the requirements of 454 CMR 28.10(11), an Asbestos Response Action must be considered complete when the average concentration of asbestos in five air samples collected within the work area and analyzed by the TEM protocol described in 40 CFR Part 763, Subpart E, Appendix A, is not statistically different, as determined through application of the Z-test calculation found in that Appendix A, from the average asbestos concentration of five air samples collected at the same time outside the work area and analyzed in the same manner, and the average asbestos concentration of the three field blanks described in the same Appendix A of Subpart E, of 70 structures per square millimeter.

5. An action may also be considered complete if the volume of air drawn for each of the five samples collected within the work area is equal to or greater than 1,199 L of air for a 25 mm filter or equal to or greater than 2,799 liters of air for a 37 mm filter, and the average concentration of asbestos as analyzed by the TEM method in 40 CFR Part 763, Subpart E, Appendix A, for the five air samples does not exceed the filter background level of 70 structures per square millimeter.

6. Should the work area fail the clearance air testing requirements of 454 CMR 28.10(11)(4) or (5), as applicable, it must be repeatedly cleaned by the Asbestos Contractor or other entity performing the work as prescribed by 454 CMR 28.10(6) until the requirements of 454 CMR 28.10(11)(4) or (5) are met.

(b) Clearance Air Monitoring Requirements for Smaller Asbestos Response Actions Conducted in School Facilities and Asbestos Response Actions of All Sizes Conducted in Non-school Facilities. For Asbestos Response Actions conducted in school facilities subject to AHERA which involve the removal, encapsulation or enclosure of 160 square feet (or less) or 260 linear feet (or less) of ACM, and for all Asbestos Response Actions conducted in all non-school facilities, clearance monitoring samples must be collected and analyzed using either the transmission electron microscopy (TEM) method prescribed by 454 CMR 28.10(1)(4) or (5) the phase contrast microscopy method, NIOSH Analytical Method 7400. Where the TEM method of analysis is elected, the sampling, analysis, and clearance level requirements must be as prescribed at 454 CMR 28.10(11), and 40 CFR Part 763, Appendix A through Subpart E. Where the phase contrast microscopy method, NIOSH Method 7400, is used, clearance air monitoring samples must be collected and analyzed as prescribed by the NIOSH 7400 Method and 454 CMR 28.10(11)(b)1. through 4.

1. In addition to adhering to the above, the licensed Asbestos Project Monitor must use a rotameter or other appropriate flow measuring device that has been calibrated to a primary standard within the past six months, to measure the air flow in the sampling train immediately prior to and immediately following the collection of the clearance air monitoring samples.

28.10: continued

2. Air samples must be collected within a negative pressure enclosure using the aggressive sampling methods described in 40 CFR Part 763, Subpart E, Appendix A.

3. For facilities subject to the requirements of AHERA at least five samples, or one sample per room, whichever is greater, must be collected and analyzed. For non-AHERA facilities at least one sample for each 500 linear/1000 square feet of asbestos or portion thereof, or one sample per room, whichever is greater, must be collected and analyzed. The collection and analysis of all samples must be in accordance with the NIOSH 7400 Method. No fewer than 1080 liters of air must be collected for clearance air samples where the NIOSH 7400 Method is used for analysis.

4. Where clearance air monitoring samples are collected and analyzed using phase contrast microscopy pursuant to 454 CMR 28.10(11)(b), an Asbestos Response Action must be considered complete when the concentration of asbestos in each of the air samples collected inside the contained work space is less than or equal to 0.010 fibers per cubic centimeter of air.

5. Should the work area fail the clearance air testing requirements of 454 CMR 28.10(11)(b)5., it must be repeatedly cleaned by the Asbestos Contractor or other entity performing the work as prescribed by 454 CMR 28.10(6) until the requirements of 454 CMR 28.10(11)(b)4. are met.

6. All analyses of clearance air monitoring samples by phase contrast microscopy pursuant to 454 CMR 28.10(11)(b) must be performed by an Asbestos Analytical Service licensed and approved pursuant to 454 CMR 28.06(1)(c).

28.11: Requirements and Work Practices for Floor and Wall Asbestos Operations and Maintenance Projects

(1) Applicability of Standards. Operations and Maintenance Projects, as defined at 454 CMR 28.02, shall be carried out in accordance with the requirements of 454 CMR 28.11. Where Operations and Maintenance Projects cannot be carried out in accordance with the requirements of 454 CMR 28.11, said Projects shall be carried out in accordance with 454 CMR 28.10. For buildings not subject to 454 CMR 28.13 (AHERA), the amount of material disturbed during Operations & Maintenance Projects shall not exceed ten square feet or 25 linear feet and is not the sum of the individual layers (ten square feet of floor tile and ten square feet of related asbestos mastics would be considered ten square feet of material).

(2) General Requirements for Asbestos Operations and Maintenance Projects.

(a) Exemption from Licensing Requirements; Requirements for Training.

1. Persons or entities who carry out Asbestos Operations and Maintenance Projects need not be certified as Asbestos Contractors or licensed as Asbestos Workers or Asbestos Supervisors, provided that all persons participating in the work have received the Asbestos Operations and Maintenance Projects Worker training specified by 454 CMR 28.05(8), and the applicable refresher training specified at 454 CMR 28.05(8)(a)4. and the work is conducted in accordance with the applicable provisions of 454 CMR 28.11.

2. Persons performing Operations and Maintenance Work involving only the removal of asphaltic shingles and felts according to requirements set forth at 454 CMR 28.11(5) may comply with the OSHA training requirements set forth at 29 CFR Part 1926.1101(k)(9)(iv) or the corresponding EPA training requirements specified by 40 CFR Part 763, Subpart G, as applicable, in *lieu* of fulfilling the training requirements of 454 CMR 28.05(8) and 28.05(8)(d).

3. Persons who have received the Asbestos Worker training specified at 454 CMR 28.05(4)(a) or the Asbestos Supervisor training specified at 454 CMR 28.05(4)(b) and the applicable refresher training specified at 454 CMR 28.05(5) will be considered to have met the training requirements for participation in Asbestos Operations and Maintenance Projects.

4. Persons carrying out Asbestos Operations and Maintenance Projects in their own single-family, owner-occupied homes are exempted from the training requirements of 454 CMR 28.05(8) and (8)(d).

(b) Personal Protection. All employees who perform Asbestos Operations and Maintenance Projects shall be comply with personal protection in accordance with the requirements of 454 CMR 28.04.

28.11: continued

(c) Notification Requirements. Persons or entities carrying out Asbestos Operations and Maintenance Projects shall comply with the applicable notification requirements of 454 CMR 28.09 and 28.11.

(3) General Work Practice Requirements. Persons or entities carrying out, or having supervisory authority over Asbestos Operations and Maintenance Projects shall ensure that the work practice requirements of 454 CMR 28.11(3)(a) through (3)(k) are met. Persons or entities carrying out, or having supervisory authority over, Asbestos Operations and Maintenance Projects involving the removal or disturbance of: vinyl asbestos tile; sheet asbestos-containing floor coverings; asbestos-containing floor mastic; asbestos-containing gypsum board and joint compounds; shall additionally comply with the applicable requirements of 454 CMR 28.11(4) through (6).

(a) All persons not directly involved in the work shall be excluded from the Work Area for the duration of the project by physical barriers or other appropriate means.

(b) Dust tight barriers shall be constructed, as necessary, to ensure that asbestos-containing dust released during work activities is contained within the Work Area. Glove bags and prefabricated mini-enclosures are permitted in place of constructed barriers.

(c) Sources of electric power for power tools or other equipment used in the Work Area shall be ground fault circuit interrupter (GFCI) protected.

(d) ACM shall be wet with Amended Water before it is disturbed, and it shall be kept wet throughout the work operation until properly containerized. In accordance with 454 CMR 28.10(4)(d)1., an exception to the wetting requirement may be granted by the Director, where wetting of Asbestos-containing Material would create slipping, electrical or other safety hazards.

(e) Where ACM is being removed, it shall be removed in an intact state to the greatest feasible extent.

(f) Where power tools are used to cut, chip or abrade an Asbestos-containing Material, said power tools shall be equipped with HEPA-filtered local exhaust attachments specifically manufactured for the tools being used.

(g) Any friable ACM exposed as a result of the work operation shall be enclosed behind dust-tight barriers or encapsulated. Encapsulants shall not be applied to severely damaged or deteriorated ACM.

(h) HEPA vacuuming or wet cleaning shall be used to decontaminate the Work Area and any equipment used in the work operation until all surfaces are free of Visible Debris. The use of compressed air or dry-sweeping is prohibited.

(i) HEPA vacuums shall be emptied and decontaminated in accordance with 454 CMR 28.10(4)(b)6.

(j) Clearance Inspections. All surfaces within the Work Area shall be visually inspected for dust, debris and other particulate residue by persons who have been trained pursuant to 454 CMR 28.05(4)(c) or (f) who are not employees or Responsible Persons of the Contractor or other entity performing the work. The Work Area shall be repeatedly cleaned by the Contractor or other entity carrying out the work operation until the no Visible Debris criterion is achieved.

(k) Disposal Requirements. Asbestos-containing debris shall be containerized, labeled, transported and disposed in accordance with 454 CMR 28.10(4)(d)2. and (5)(i); 310 CMR 7.00: *Air Pollution Control* and 310 CMR 19.000: *Solid Waste Management*; the EPA National Emission Standard for Asbestos (NESHAP) as contained in 40 CFR Part 61, Subpart M; and other applicable state and federal standards.

(4) Special Procedures for the Removal of Asbestos Floor Tile, Sheet Floor Coverings and Asbestos Mastics as Operations and Maintenance Work.

(a) General Requirements.

1. Persons carrying out the removal of asbestos floor tile, sheet floor coverings and mastics must presume that said materials contain asbestos, unless asbestos bulk analysis or manufacturer's specifications indicate otherwise.

2. Asbestos floor tile, sheet floor coverings and mastics being removed must not be sanded, dry-swept, dry-scraped, drilled without a HEPA shroud, sawed, abrasive-blasted, mechanically chipped or pulverized.

28.11: continued

3. All furniture and other movable objects must be removed from the Work Area before asbestos response action begins. All non-moveable objects in the Work Area must be wrapped or covered with six-mil thick (minimum) plastic sheeting. Plastic sheet coverings must be completely sealed with duct tape or equivalent.

4. The entire floor surface from which asbestos floor tile or sheet floor coverings are to be removed must be vacuumed with a HEPA vacuum prior to removal of the floor tile or coverings.

5. Work shall be in compliance with the Resilient Floor Coverings Institute (RFCI) document Recommended Work Practices for Removal of Resilient Floor Coverings Published January 2018 found at www.rfci.com and on the Department's website, incorporated by reference.

(b) Procedures for Removal of Asbestos Floor Tile.

1. Except as allowed by 454 CMR 28.11(4)(b)3., floor tiles must be wetted with amended water prior to removal and kept wet throughout the removal process.

2. Floor tiles must be individually removed by prying upward with hand scrapers or similar hand-held tools in a manner which minimizes breakage. Removal with spud-bars, ice scrapers or similar implements is not allowed. Where tile do not readily release from underlying mastic, the removal tool may be struck with a hammer to facilitate release. Floor tile must be removed in an intact state to the extent feasible.

3. Surfaces of tiles may be heated with a heat gun or other heat source to soften the adhesive and facilitate tile removal. Where heat is used to facilitate removal, the wetting of the tile specified by 454 CMR 28.11(4)(b)1. may be delayed until after release of the tile from the floor surface.

4. Removed floor tile and asbestos-contaminated debris within the Work Area must be promptly cleaned up and containerized while still wet. Containerized ACM must be removed from the Work Area at least once each working shift. Waste not containing components with sharp edges must be containerized in two plastic bags (six-mil minimum thickness each bag, one inside the other) or in metal, plastic or fiber drums with locking lids. Floor tile with sharp edges and sharp edged components likely to puncture the plastic bags specified above must be contained in leak-proof metal, plastic or plastic-lined, drums or boxes. The outer surface or layer of waste material shall be free of asbestos contamination before exiting the Work Area.

5. Following containerization of floor tile and associated debris, the floor surface must be HEPA-vacuumed while still wet and then allowed to dry.

6. Immediately after drying, the floor surface must be HEPA-vacuumed again before the visual inspection required by 454 CMR 28.11(3)(j) is performed.

(c) Procedures for Removal of Sheet Asbestos Flooring.

1. Where it is necessary to cut sheet asbestos flooring to facilitate handling, the same must be cut with a knife. Tearing or sawing of sheet asbestos flooring as a method of removal is prohibited.

2. Where sheet asbestos flooring adheres to the floor surface, points of adhesion must be continually misted or sprayed with amended water as these points are separated during the removal process. Hand scrapers or similar hand tools may be used to facilitate release of the sheet flooring from the underlying surface.

3. Removed sheet flooring and asbestos-contaminated debris within the Work Area must be promptly cleaned up and containerized while still wet. Containerized ACM must be removed from the Work Area at least once each working shift. Waste not having sharp-edged components must be containerized in two plastic bags (six-mil minimum thickness each bag, one inside the other) or in metal, plastic or plastic-lined drums or boxes. Removed material or debris with sharp edges and sharp edged components likely to puncture the plastic bags specified above must be contained in leak-proof metal, plastic or plastic-lined, drums or boxes. The outer surface or layer of waste material shall be free of asbestos contamination before exiting the Work Area.

4. Following containerization of sheet floor covering and associated debris, the floor surface must be HEPA-vacuumed while still wet and then allowed to dry.

5. Immediately after drying, the floor surface must be HEPA-vacuumed again before the visual inspection required by 454 CMR 28.11(3)(j) is performed.

28.11: continued

(5) Special Procedures for the Removal or Repair of Asbestos-containing Gypsum Board/Joint Compound Systems as Operations and Maintenance Work.

(a) Where removal of sections of gypsum board is required, said sections must be removed intact to the greatest extent feasible.

(b) Where gypsum board/joint compound systems must be cut to allow removal or refitting of sections, only the minimum number of cuts necessary to accomplish said removal or refitting must be permitted.

(c) Manually operated tools or power tools fitted with HEPA-filtered vacuum attachments must be used for the cutting or resurfacing of asbestos-containing gypsum board/joint compound systems.

(d) Where manually operated tools are used for the cutting or resurfacing of gypsum board/joint compound systems, the area being cut must be continually misted with amended water during the cutting operation.

(e) Dry sanding of asbestos-containing wallboard/joint compound systems during refinishing operations must not be allowed; only wet sanding is permitted.

(f) Where holes of ½" or less in diameter are to be drilled through asbestos gypsum board/joint compound systems, the area encompassing the hole must be covered with a sufficient quantity of shaving foam, or other suitable engineering control, to catch the generated chips and dust. Where holes of greater than ½" are to be drilled, the area being drilled must be continually misted with Amended Water during the drilling operation.

28.12 Special Procedures for the Removal of Asbestos Roofing and Siding Materials

(1) Requirements for Asphaltic Shingles and Felts.

(a). Asphaltic shingles and felts must be removed intact to the greatest extent feasible.

(b). Roof level heating and ventilation air intake sources must be isolated by covering with plastic sheeting prior to the start of the work.

(c). Wet methods must be used to remove asphaltic shingles and felts that are not intact, or will be rendered non-intact by the removal, unless such wet methods are not feasible or will create safety hazards. This requirement notwithstanding, removal or repair of sections of intact roofing does not require the use of wet methods or HEPA vacuuming as long as the methods used in the removal or repair do not render the roofing material non-intact, and no visible emissions are produced.

(d). Where cutting machines are used in the removal of asphaltic shingles and felts, said cutting machines shall be equipped with a HEPA vacuum to capture dust produced by the cutting process. Cutting machines that are not equipped with a HEPA vacuum to capture dust produced by the cutting process shall only be used inside a work area for which containment sufficient to prevent visible emissions of fugitive dust to the ambient air has been established.

(e). Where cutting machines are used in the removal of asphaltic shingles and felts, the material shall be adequately wetted throughout the cutting process.

(f). Dust produced by power roof cutters operating on aggregate surfaces must be removed by HEPA vacuuming. Dust produced by power roof cutters operating on non-aggregate, smooth surfaces must be removed by HEPA vacuuming or wet wiping along the cut line.

(g). Asbestos-containing shingles or felts must not be dropped or thrown to the ground. Unless the material is carried or passed to the ground by hand, it must be lowered to the ground by crane or hoist or transferred in dust-tight chutes.

(h). Intact asphaltic shingles and felts must be lowered to the ground not later than the end of each shift. Where feasible, non-intact asphaltic shingles and felts must be kept wet at all times while on the roof, placed in an impermeable waste bag (six-mil minimum thickness) or wrapped in plastic sheeting (six-mil minimum thickness), sealed with duct tape and lowered to the ground not later than the end of each work shift.

(2) Requirements for Cementitious Asbestos-Containing Shingles, Siding and Panels.

(a). Tarpaulin or plastic sheeting will be spread on the ground under the areas where the shingles, siding or panels are being removed. Said tarpaulin or plastic sheeting must extend away from the edge of the building and to either side of the work area a sufficient distance to catch any debris generated by the work operation. Tarpaulin or sheeting must be cleaned of accumulated debris no later than the end of each work shift.

28.12: continued

(b) Openings of windows on the side of the building where the work is taking place must be closed or sealed with polyethylene sheeting and duct tape in a manner sufficient to prevent leakage of dust or debris to interior spaces.

(c) Cementitious asbestos-containing shingles, siding and panels must be removed whole and intact to the greatest feasible extent. Methods predisposing shingles siding or panels to breakage during removal is prohibited.

(d) Each panel or shingle must be adequately wetted with Amended Water prior to removal.

(e) Nails securing shingles must be cut or pulled prior to shingle removal. Shingles, siding or panels must be carefully lowered to the ground to avoid breakage.

(f) Removed shingles, siding or panels and associated debris must be containerized in leak-proof metal, plastic or plastic-lined drums or boxes or wrapped with double thickness plastic sheeting (six-mil minimum thickness each layer) sealed with duct tape no later than the end of each work shift. The outer surface or layer of waste material shall be free of asbestos contamination before exiting the Work Area.

(g) Persons performing work involving only the removal of asbestos roofing and siding materials may comply with the OSHA training requirements set forth at 29 CFR 1926.1101(k)(9)(iv) or the corresponding EPA training requirements specified by 40 CFR Part 763, Subpart G, as applicable, in *lieu* of fulfilling the training requirements of 454 CMR 28.00.

(h) Clearance Inspections. The Work Area and perimeter shall be visually inspected for dust, debris and other particulate residue. The Work Area and perimeter shall be repeatedly cleaned by the Contractor or other entity carrying out the work operation until the no Visible Debris criterion is achieved.

(i) Persons performing work involving only the removal of asbestos roofing and siding materials must retain records and documents for a period of at least 15 years.

28.13: Requirements for Schools Subject to AHERA

In accordance with Massachusetts Department of Labor Standards Delegation from EPA effective October 24, 1998, published in the *Federal Register* on Tuesday, October 27, 1998, schools subject to AHERA must comply with 454 CMR 28.13 after July 1, 2020. Inspections, samplings, assessments, and response actions conducted prior to July 1, 2020 must be in accordance with 40 CFR Part 763, and 454 CMR 28.13. Unless required by circumstances such as renovation and demolition activities, resampling of materials is not required by 454 CMR 28.13. All definitions for terms in this document are found at 454 CMR 28.02, which are as consistent as practicable with EPA and OSHA.

454 CMR:

28.13(1): *General Local AgencyRequirements*;
28.13(2): *Inspections and Reinspections*;
28.13(3): *Sampling*;
28.13(4): *Analysis*;
28.13(5): *Assessment*;
28.13(6): *Response Actions*;
28.13(7): *Operations and Maintenance*;
28.13(8): *Training and Periodic Surveillance*;
28.13(9): *Management Plans*;
28.13(10): *Recordkeeping*;
28.13(11): *Warning Labels*;
28.13(12): *Exclusions*; and
28.13(13): *Effective Date*.

(1) General Local Education Agency (LEA) Requirements.

(a) Each local education agency must:

1. Ensure that the activities of any persons who perform inspections, reinspections, and periodic surveillance, develop and update management plans, and develop and implement response actions, including operations and maintenance, are carried out in accordance with 454 CMR 28.00.

28.13: continued

2. Ensure that all custodial and maintenance employees are properly trained as required by this document and other applicable Federal and/or State regulations (*e.g.*, the Occupational Safety and Health Administration asbestos standard for construction, 29 CFR 1926.1101, or 454 CMR 25.00: *Occupational Safety and Health for Public Sector Workers*).

3. Ensure that workers and building occupants, or their legal guardians, are informed at least once each school year about inspections, response actions, and post-response action activities, including periodic reinspection and surveillance activities that are planned or in progress.

4. Ensure that short-term workers (*e.g.*, telephone repair workers, utility workers, computer cabling or exterminators) who may come in contact with asbestos in a school are provided information regarding the locations of ACM and suspected ACM assumed to be ACM.

5. Ensure that warning labels are posted in accordance with 454 CMR 28.13(11).

6. Ensure that management plans are available for inspection and notification of such availability has been provided as specified in the management plan under 454 CMR 28.13(9).

(b) Designate a person to ensure that requirements under 454 CMR 28.12(1) are properly implemented. Ensure that the designated person receives adequate training to perform duties assigned under 454 CMR 28.12(1). Such training must provide, as necessary, basic knowledge of:

1. Health effects of asbestos;
2. Detection, identification, and assessment of ACM;
3. Options for controlling ACM;
4. Asbestos management programs;
5. Relevant Federal and State regulations concerning asbestos, including those referenced herein and those of the Occupational Safety and Health Administration, U.S. Department of Labor, the U.S. Department of Transportation and the U.S. Environmental Protection Agency; and
6. Consider whether any conflict of interest may arise from the interrelationship among accredited and licensed personnel and whether that should influence the selection of accredited and/or licensed personnel to perform activities under 454 CMR 28.12.

(2) Inspections and Reinspections.

(a) Inspections. All local education agencies (LEAs) are required to inspect each school building that they lease, own or otherwise use as a school building to identify all locations of friable and non-friable ACM, except for those buildings which have been inspected as required by the AHERA and for which documentation of said inspection was filed with the State as required by the AHERA prior to publication of 454 CMR 28.13(2).

The inspection must be conducted as described under 454 CMR 28.13(2)(b) and (c) prior to use as a school building.

1. Each inspection must be made by a currently licensed asbestos inspector.
2. For each area of a school building, except as excluded under 454 CMR 28.13(12), each licensed Inspector performing an inspection must:
   a. Visually inspect the area to identify the locations of all suspected ACM;
   b. Touch all suspected ACM to determine whether it is friable;
   c. Identify all homogeneous areas of friable suspected ACM and all homogeneous areas of non-friable suspected ACM;
   d. For each identified homogeneous area that is not assumed to be ACM, collect and submit for analysis bulk samples under 454 CMR 28.13(4);
   e. Assess under 454 CMR 28.13(4) friable material in areas where samples are collected, friable material in areas that are assumed to be ACM, and friable ACM identified during a previous inspection; and
   f. Record the following and submit to the person designated under 454 CMR 28.13(1), a copy of such record for inclusion in the management plan within 30 days of the inspection:
      i. An inspection report with the date of the inspection, signed by each licensed person making the inspection and must include the license number and expiration date along with a copy of current training certificate of the inspector.

28.13: continued

ii. An inventory of the locations of the homogeneous areas where samples are collected, exact location where each bulk sample is collected, dates that samples are collected, homogeneous areas where friable suspected ACM is assumed to be ACM, and homogeneous areas where non-friable suspected ACM is assumed to be ACM;

iii. A description of the manner used to determine sampling locations, the name and signature of each DLS licensed inspector who collected the samples, including license number and expiration date along with a copy of current training certificates;

iv. A list of whether the homogeneous areas identified under 454 CMR 28.12(2)(a)2.e.iv. are surfacing material, thermal system insulation, or miscellaneous material; and

v. Assessments made of friable material, the name and signature of each licensed inspector making the assessment, his or her license number and expiration date and current training certificate.

(b) Reinspections.

1. At least once every three years after a management plan is implemented, each local education agency must conduct a reinspection of all friable and nonfriable known or assumed ACM and any not previously identified suspect ACM, regardless of whether or not these areas were included in the original inspection and management plan, in each school building that they lease, own, or otherwise use as a school building.

Each local education agency must submit to the Department within 30 days of the reinspection, documentation that a reinspection has been performed. This documentation must be submitted on a form prescribed by the Director and submitted electronically to the Department's website by the LEA.

2. Each inspection must be made by a licensed inspector.

3. For each area of a school building, each person performing a reinspection must:

a. Visually reinspect and reassess under 454 CMR 28.13(6) the condition of all friable and non-friable known or assumed ACM;

b. Visually inspect material that was previously considered non-friable ACM and touch the material to determine whether it has become friable since the last inspection or reinspection;

c. Visually inspect and assess under 454CMR 28.13(5) materials such as, but not restricted to, ceiling tile, wallboard, plaster walls, linoleum, fire doors, duct insulation and vibration dampening cloth, which are considered suspect ACM;

d. Identify any homogeneous areas with material that has become friable since the last inspection or reinspection;

e. For each homogeneous area of newly friable material that is already assumed to be ACM, may collect and submit bulk samples for analysis in accordance with 454 CMR 28.13(3) and (4);

f. Any remaining ACM that is present and was previously unidentified, and is now accessible and visible will be included in the reinspection, and provided a physical assessment under 454 CMR 28.13(6);

g. Assess under 454 CMR 28.13(5) the condition of the newly friable material in areas where samples are collected, and newly friable materials in areas that are assumed to be ACM;

h. Reassess under 454 CMR 28.13(5) the condition of friable known or assumed ACM previously identified;

i. Record the following and submit to the person designated under 454 CMR 28.13(1) a copy of such record for inclusion in the management plan within 30 days of the reinspection:

i. The date of the reinspection, the name and signature of the person making the reinspection, and any changes in the condition of known or assumed ACM;

ii. The exact locations where samples are collected during the reinspection, a description of the manner used to determine sampling locations, the name and signature of each licensed inspector who collected the samples, license number and expiration date;

iii. Any assessments or reassessments made of friable material, the name and signature of the licensed inspector making the assessments, license number and expiration date; and

28.13: continued

iv. General. Thermal system insulation that has retained its structural integrity and that has an undamaged protective jacket or wrap that prevents fiber release shall be treated as non-friable and therefore is subject only to periodic surveillance and preventive measures as necessary.

(3) Sampling.

(a) Surfacing Material. A licensed inspector must collect bulk samples of surfacing material, in a statistically random manner which is representative of the homogeneous area of friable surfacing material that is not assumed to be ACM, and must collect such samples as follows:

1. At least three bulk samples from each homogeneous area that is 1,000 square feet or less, except as provided in 454 CMR 28.13(4);

2. At least five bulk samples must be collected from each homogeneous area that is greater than 1,000 square feet, but less than or equal to 5,000 square feet, except as provided in 454 CMR 28.13(4); or

3. At least seven bulk samples must be collected from each homogeneous area that is greater than 5,000 square feet, except as provided in 454 CMR 28.13(5).

(b) Thermal System Insulation.

1. Except as provided in 454 CMR 28.13(4), a licensed inspector must collect, in a randomly distributed manner, at least three bulk samples from each homogeneous area of thermal system insulation that is not assumed to be ACM.

2. A licensed inspector must collect at least one bulk sample from each homogeneous area of patched thermal system insulation that is not assumed to be ACM if the patched section is less than six linear or square feet.

3. In a manner sufficient to determine whether the material is ACM or not ACM, a licensed inspector must collect bulk samples from each insulated mechanical system that is not assumed to be ACM where cement or plaster is used on fittings such as tees, elbows, or valves, except as provided under 454 CMR 28.13(4). At least one sample per fitting.

4. Bulk samples are not required to be collected from any homogeneous area where the licensed inspector has determined that the thermal system insulation is fiberglass, foam glass, rubber, or other non-ACM.

5. Miscellaneous material. In a manner sufficient to determine whether material is ACM or not ACM, a licensed inspector must collect bulk samples from each homogeneous area of friable miscellaneous material that is not assumed to be ACM.

6. Non-friable suspected ACM. If any homogeneous area of non-friable suspected ACM is not assumed to be ACM, then a licensed inspector must collect, in a manner sufficient to determine whether the material is ACM or not ACM, bulk samples from the homogeneous area of non-friable suspected ACM that is not assumed to be ACM.

(4) Analysis.

(a) Local education agencies must have bulk samples, collected under 454 CMR 28.13(3) and submitted for analysis and analyzed for asbestos using laboratories certified by the Department.

(b) Bulk samples must not be composited for analysis and must be analyzed for asbestos content by polarized light microscopy (PLM), using the EPA "Method for the Determination of Asbestos in Bulk Building Materials" (EPA/600/R-93/116), or TEM for non-friable materials.

(c) A homogeneous area is considered not to contain ACM only if the results of all samples required to be collected from the area show asbestos in amounts of 1% or less.

(d) A homogeneous area must be determined to contain ACM based on a finding that the results of at least one sample collected from the area shows that asbestos is present in an amount greater than 1%.

(e) The name and address of each certified Asbestos Analytical Service performing an analysis, the date of analysis, and the name and signature of the person performing the analysis must be submitted to the person designated under 454 CMR 28.13(1) for inclusion into the management plan within 30 days of the analysis.

(f) The Inspector must be independent of the Asbestos Analytical Service analyzing the samples.

28.13: continued

(5) Assessment.

(a) For each inspection and reinspection under 454 CMR 28.13(2)(a) and (b) and previous inspections specified under 454 CMR 28.13(1), the local education agency must have an licensed inspector provide a written assessment of all friable known or assumed ACM in the school building.

(b) Each licensed inspector providing a written assessment must sign and date the assessment, provide his or her current license and training certificate, and submit a copy of the assessment to the person designated under 454 CMR 28.13(5) for inclusion in the management plan within 30 days of the assessment.

(c) The licensed inspector must classify and give reasons in the written assessment for classifying the ACM and suspected ACM assumed to be ACM in the school building into one of the following categories:

1. Damaged or significantly damaged thermal system ACM;
2. Damaged friable surfacing ACM;
3. Significantly damaged friable surfacing ACM;
4. Damaged or significantly damaged friable miscellaneous ACM;
5. ACM with potential for damage;
6. ACM with potential for significant damage; and
7. Any remaining friable ACM or friable suspected ACM.

(d) Assessment must include the following considerations:

1. Location and the amount of the material, both in total quantity and as a percentage of the functional space;
2. Condition of the material, specifying:
3. Type of damage or significant damage (*e.g.*, flaking, blistering, water damage, or other signs of physical damage);
4. Severity of damage (*e.g.*, major flaking, severely torn jackets, as opposed to occasional flaking, minor tears to jackets);
5. Extent or spread of damage over large areas or large percentages of the homogeneous area;
6. Whether the material is accessible;
7. The material's potential for disturbance;
8. Known or suspected causes of damage or significant damage (*e.g.*, air erosion, vandalism, vibration, water); and
9. Preventive measures which might eliminate the reasonable likelihood of undamaged ACM from becoming damaged or significantly damaged.

(e) The local education agency must select a Management Planner licensed to develop management plans to review the results of each inspection, reinspection, and assessment for the school building and to conduct any other necessary activities in order to recommend in writing to the local education agency appropriate response actions. The licensed person must sign and date the recommendation, provide his or her current license and training certificate, and, if applicable, provide his or her accreditation number, and submit a copy of the recommendation to the person designated under 454 CMR 28.13(7) for inclusion in the management plan.

(f) The Management Planner is responsible for informing the LEA in writing if the Management Plan is missing in part or in whole. The LEA is then responsible for replacing the missing portions of the Management Plan.

(6) Response Action.

(a) The local education agency must select and implement in a timely manner the appropriate response actions in 454 CMR 28.13(5) consistent with the assessment conducted in 454 CMR 28.13(5). The response actions selected shall be sufficient to protect human health and the environment. The local education agency may then select, from the response actions which protect human health and the environment, that action which is the least burdensome. For purposes of determining which of these response actions is the least burdensome, the local education agency may consider local circumstances, including occupancy and use patterns within the school building, and its economic concerns, including short-term and long-term costs. The response action must at a minimum meet the requirements as set forth in 454 CMR 12.13(6)(a) through (h). No asbestos abatement shall be performed in a school building while school is in session during normal school hours without the prior written approval of the Department, except for an emergency project.

28.13: continued

(b) If damaged or significantly damaged thermal system insulation ACM is present in a building, the local education agency must:

1. Repair the damaged area; or
2. Remove the damaged material if it is not feasible, due to technological factors, to repair the damage; and
3. Maintain all thermal system insulation ACM and its covering in an intact state and undamaged condition.

(c) If damaged friable surfacing ACM or damaged friable miscellaneous ACM is present in a building, the local education agency must select the response actions that best protects human health and the environment from among the following:

1. Encapsulation;
2. Enclosure;
3. Removal; or
4. Repair.

(d) If significantly damaged friable surfacing ACM or significantly damaged friable miscellaneous ACM is present in a building the local education agency must:

1. Immediately isolate the functional space and restrict access, unless the licensed management planner determines that isolation is not necessary to protect human health and the environment; and
2. Remove the material in the functional space or, depending upon whether the licensed management planner determines that enclosure or encapsulation would be sufficient to protect human health and the environment, enclose or encapsulate.

(e) If any friable surfacing ACM, thermal system ACM, or friable miscellaneous ACM that has potential for damage is present in a building, the local education agency must at least implement an O & M program, as described under 454 CMR 28.13(7).

(f) If any friable surfacing ACM, thermal system insulation ACM, or friable miscellaneous ACM that has potential for significant damage is present in a building, the local education agency must:

1. Implement an O & M program as described under 454 CMR 28.13(7);
2. Immediately isolate the area and restrict access if necessary to avoid an imminent and substantial endangerment to human health or the environment;
3. Institute preventive measures appropriate to eliminate the reasonable likelihood that the ACM or its covering will become significantly damaged, deteriorated, or delaminated; and
4. Remove the material as soon as possible if appropriate preventive measures cannot be effectively implemented. Or, unless other response actions are determined to protect human health and the environment, immediately isolate the area and restrict access if necessary to avoid an imminent and substantial endangerment to human health or the environment.

(g) Response actions including removal, encapsulation, enclosure, or repair, other than small-scale, short-duration repairs, must be designed and conducted by persons licensed to design and conduct response actions.

(h) Completion of Response Actions.

1. At the conclusion of any action to remove, encapsulate, or enclose ACM or material assumed to be ACM, a licensed person designated by the local education agency must visually inspect each functional space where such action was conducted to determine whether the action has been properly completed.
2. A licensed project monitor designated by the local education agency must collect air samples using aggressive sampling as described in 40 CFR Part 763, Subpart E, Appendix A, to monitor air for clearance after each removal, encapsulation, and enclosure project involving ACM, except for projects that are small scale short durations as defined in 454 CMR 28.10 (2).
3. Local education agencies must have air samples collected under 454 CMR 28.12(6)(h) analyzed for asbestos using laboratories accredited by the National Institute of Standards and Technology with current certification from DLS to conduct such analysis using transmission electron microscopy (TEM) or, under circumstances permitted in 454 CMR 28.12(6)(h), laboratories enrolled in the American Industrial Hygiene Association Proficiency Analytical Testing Program for phase contrast microscopy (PCM).

28.13: continued

4. Except as provided in 454 CMR 28.12(5) and (6), an action to remove, encapsulate, or enclose ACM must be considered complete when the average concentration of asbestos of five air samples collected within the affected functional space and analyzed by the TEM method in 40 CFR Part 763, Subpart E, Appendix A, is not statistically significantly different, as determined by the Z-test calculation found in Appendix A from the average asbestos concentration of five air samples collected at the same time outside the affected functional space and analyzed in the same manner, and the average asbestos concentration of the three field blanks described in Appendix A is below the filter background level, as defined in Appendix A, of 70 structures per square millimeter (70 s/sq mm).

5. An action must also be considered complete if the volume of air drawn for each of the five samples collected within the affected functional space is equal to or greater than 1,199 liters of air for a 25 mm filter or equal to or greater than 2,799 liters of air for a 37 mm filter, and the average concentration of asbestos as analyzed by the TEM method in 40 CFR Part 763, Subpart E, Appendix A, for the five air samples does not exceed the filter background level, as defined in Appendix A, of 70 structures per square millimeter (70 s/sq mm). If the average concentration of asbestos of the five air samples within the affected functional space exceeds 70 structures per square millimeter (70 s/sq mm), or if the volume of air in each of the samples is less than 1,199 liters of air for a 25 mm filter or less than 2,799 liters of air for a 37 mm filter the action must be considered complete only when the requirements of 454 CMR 28.12(4) or (6) are met.

6. At any time, a local education agency may analyze air monitoring samples collected for clearance purposes by phase contrast microscopy (PCM) to confirm completion of removal, encapsulation, or enclosure of ACM that is greater than a small scale short duration as defined in 454 CMR 28.02, and less than or equal to 160 square feet or 260 linear feet. The action must be considered complete when the results of samples collected in the affected functional space and analyzed by phase contrast microscopy using the most current National Institute for Occupational Safety & Health (NIOSH) Method 7400, Issue 3, dated April 29, 2019 show that the concentration of fibers for each of the five or more samples is less than or equal to a limit of quantitation for PCM - 0.01 fibers per cubic centimeter (0.01 f/cc) of air.

7. To determine the amount of ACM affected under 454 CMR 28.12(6), the local education agency must add the total square or linear footage of ACM within the containment barriers used to isolate the functional space for the action to remove, encapsulate, or enclose the ACM. Contiguous portions of material subject to such action conducted concurrently or at approximately the same time within the same school building must not be separated to qualify under 454 CMR 28.12(6).

(i) The requirements of 454 CMR 28.12(6) in no way supersede the worker protection and work practice requirements under any applicable state regulation, including M.G.L. c. 149, § 6½.

(7) Operations and Maintenance (O & M).

(a) Applicability. The local education agency must implement an O & M program under 454 CMR 28.12(7) whenever any friable ACM is present or assumed to be present in a building that it leases, owns, or otherwise uses as a school building. Any material identified as non-friable ACM or non-friable assumed ACM must be treated as friable ACM for purposes of 454 CMR 28.12(7) when the material is about to become friable as a result of activities performed in the school building.

(b) Cleaning.

1. Initial Cleaning. Unless the building has been cleaned using equivalent methods within the previous six months, all areas of a school building where friable ACM, damaged or significantly damaged thermal system insulation ACM, or friable suspected ACM assumed to be ACM are present must be cleaned at least once after the completion of the required initial inspection under 454 CMR 28.13(7)(a) and before the initiation of any response action, other than O & M activities or repair, according to the following procedures:

a. HEPA-vacuum or steam-clean all carpets;

b. HEPA-vacuum or wet-clean all other floors and all other horizontal surfaces; and

28.13: continued

c. Dispose of all debris, filters, mop heads, and cloths in sealed, leak-tight containers.

2. Additional Cleaning. The licensed management planner must make a written recommendation to the local education agency whether additional cleaning is needed, and if so, the methods and frequency of such cleaning.

(c) Operations and Maintenance Activities. The local education agency must ensure that the procedures described in 454 CMR 28.12(7)(c)1. through 6. to protect building occupants must be followed for any operations and maintenance activities disturbing friable ACM.

1. Restrict entry into the area by persons other than those necessary to perform the maintenance project, either by physically isolating the area or by scheduling.

2. Post signs to prevent entry by unauthorized persons.

3. Shut off or temporarily modify the air-handling system and restrict other sources of air movement.

4. Use work practices or other controls, such as: wet methods, protective clothing, HEPA-vacuums, mini-enclosures or glove bags, as necessary to inhibit the spread of any released fibers.

5. Clean all fixtures or other components in the immediate work area.

6. Place the asbestos debris and other cleaning materials in a sealed, leak-tight container.

(d) Maintenance Activities Other than Small Scale Short Duration Ones. The response action for any maintenance activities disturbing friable ACM, other than small scale short durations, must be designed by persons licensed to design response actions and conducted by persons licensed to conduct response actions.

(e) Fiber Release Episodes.

1. Minor fiber release episode. The local education agency must ensure that the procedures described below are followed in the event of a minor fiber release episode (*i.e.*, the falling or dislodging of three square or linear feet or less of friable ACM).

a. Thoroughly saturate the debris using wet methods;

b. Clean the area, as described in 454 CMR 28.13(7)(d);

c. Place the asbestos debris in a sealed, leak-tight container;

d. Repair the area of damaged ACM with materials such as; asbestos-free spackling, plaster, cement, or insulation; or seal with latex paint or an encapsulant; or immediately have the appropriate response action implemented as required by 454 CMR 28.13(2).

2. Major Fiber Release Episode. The local education agency must ensure that the procedures described in 454 CMR 28.12(7)(e)2.a. through d. are followed in the event of a major fiber release episode (*i.e.*, the falling or dislodging of more than three square or linear feet of friable ACM).

a. Restrict entry into the area and post signs to prevent entry into the area by persons other than those necessary to perform the response action.

b. Shut off or temporarily modify the air-handling system to prevent the distribution of fibers to other areas in the building.

c. The response action for any major fiber release episode must be designed by persons licensed to design response actions and conducted by persons licensed to conduct response actions.

d. The local education agency must notify the Department of any major fiber release episode within 24 hours of its occurrence and, if necessary, provide written notification as required by applicable federal and/or state regulations.

(8) Training and Periodic Surveillance.

(a) Training.

1. The local education agency must ensure, prior to the implementation of the O & M provisions of the management plan, that all members of its maintenance and custodial staff (custodians, electricians, heating/air conditioning engineers, plumbers, *etc.*) who may work in a building that contains ACM receive awareness training of at least two hours, whether or not they are required to work with ACM. New custodial and maintenance employees must be trained within 60 days after commencement of employment. Training must include, but not be limited to:

28.13: continued

a. Information regarding asbestos and its various uses and forms;

b. Information on the health effects associated with asbestos exposure;

c. Locations of ACM identified throughout each school building in which they work;

d. Recognition of damage, deterioration, and delamination of ACM; and

e. Name and telephone number of the person designated to carry out general local education agency responsibilities under 454 CMR 28.13(1) and the availability and location of the management plan.

2. The local education agency must ensure that all members of its maintenance and custodial staff who conduct any activities that will result in the disturbance of ACM must receive training described in 454 CMR 28.13(1) and 14 hours of additional training. Additional training must include, but not be limited to:

a. Descriptions of the proper methods of handling ACM;

b. Information on the use of respiratory protection as contained in the EPA/NIOSH Guide to Respiratory Protection for the Asbestos Abatement Industry, September 1986 (EPA 560/OPTS-86-001), as amended, and other personal protection measures;

c. The provisions of 454 CMR 28.13(7), 40 CFR Part 763, Subpart E, Appendices A, B, C, D of EPA regulations contained in 40 CFR Part 763, Subpart G, and in 40 CFR Part 61, Subpart M, and OSHA regulations contained in 29 CFR 1926.1101, as respectively amended; and M.G.L. c. 149, § 6½; and

d. Hands-on training in the use of respiratory protection, other personal protection measures, and good work practices.

3. Local education agency maintenance and custodial staff who have attended a training program accredited under the EPA Model Accreditation Plan, which includes as a minimum all of the training requirements listed in 454 CMR 28.13(8), must be considered trained for the purposes of 454 CMR 28.13(8).

(b) Periodic Surveillance.

1. At least once every six months after a management plan is in effect, each local education agency must conduct periodic surveillance in each building that it leases, owns, or otherwise uses as a school building that contains ACM or is assumed to contain ACM. The reinspection required every three years under 454 CMR 28.13(2) will satisfy the six-month periodic surveillance requirement if the reinspection coincides with the date of the six month surveillance inspection.

2. Each person performing periodic surveillance must:

a. Visually inspect all areas that are identified in the management plan as ACM or assumed ACM;

b. Record the date of the surveillance, his or her name, and any changes in the condition of the materials; and

c. Submit to the person designated to carry out general local education agency responsibilities under 454 CMR 28.13(1) a copy of such record for inclusion in the management plan.

(9) Management Plans.

(a) Each local education agency must develop an asbestos management plan for each school, including all buildings that they lease, own, or otherwise use as school buildings, and submit the plan to the Department.

(b) Each local education agency must implement its management plan prior to its use or occupancy of the building or part of the building as a school.

(c) Each local education agency shall maintain and update its management plan to keep it current with ongoing operations and maintenance, periodic surveillance, inspection, reinspection, and response action activities. All provisions required to be included in the management plan under 454 CMR 28.12(9) shall be retained as part of the management plan, as well as any information that has been revised to bring the plan up-to-date.

(d) The management plan shall be developed by a licensed management planner and shall include:

1. A list of the name and address of each school building and whether the school building contains friable ACM, non-friable ACM and friable and non-friable suspected ACM assumed to be ACM;

28.13: continued

2. A list of specific steps or actions to be completed prior to the use or occupancy of the building or part of the building as a school;

3. For each inspection conducted before December 14, 1987:

a. The date of the inspection;

b. A blueprint, diagram, or written description of each school building that identifies clearly each location and approximate square or linear footage of any homogeneous or sampling area where material was sampled for ACM, and, if possible, the exact locations where bulk samples were collected, and the dates of collection;

c. A copy of the analyses of any bulk samples, dates of analyses, and a copy of any other certified Asbestos Analytical Service reports pertaining to the analyses;

d. A description of any response actions or preventive measures taken to reduce asbestos exposure including, if possible, the names and addresses of all contractors involved, start and completion dates of the work, and results of any air samples analyzed during and upon completion of the work; and

e. A description of assessments, required to be made under 454 CMR 28.13(5) of material that was identified before December 14, 1987, as friable ACM or friable suspected ACM assumed to be ACM, and the name, signature, and current license and training certificate, and if applicable, accreditation number of each licensed person making the assessments.

4. For each inspection and reinspection conducted under 454 CMR 28.13(2):

a. The date of the inspection or reinspection, and the name and signature, current license and training certificate inspector performing the inspection or reinspection;

b. Blueprint, diagram, or written description of each school building which identifies clearly each location and approximate square or linear footage of homogeneous areas where material was sampled for ACM, the exact location where each bulk sample was collected, date of collection, homogeneous areas where friable suspected ACM is assumed to be ACM, and where nonfriable suspected ACM is assumed to be ACM;

c. A description of the manner used to determine sampling locations, and the name and signature of each licensed inspector collecting samples, a copy of the current license and training certificate;

d. A copy of the analyses of any bulk samples collected and analyzed, the name and address of any Asbestos Analytical Service that analyzed bulk samples, a statement that the Asbestos Analytical Service meets the applicable requirements of 454 CMR 28.13(4), the date of analysis, and the name and signature of the person performing the analysis; and

e. A description of assessments, required to be made under 454 CMR 28.13(5), of all ACM and suspected ACM assumed to be ACM, and the name, signature, current license and training certificate, and if applicable, accreditation number of each licensed person making the assessments.

5. The name, address, and telephone number of the person designated under 454 CMR 28.13(1) to ensure that the duties of the local education agency are carried out, and the course name, and dates and hours of training taken by that person to carry out the duties;

6. The recommendations made to the local education agency regarding response actions, per 454 CMR 28.13(6)(e), including the name, signature, current license and training certificate of each person making the recommendations.;

7. A detailed description of preventive measures and response actions to be taken, including methods to be used for any friable ACM, the locations where such measures and action will be taken, reasons for selecting the response action or preventive measure, and a schedule for beginning and completing each preventive measure and response action;

8. With respect to the person or persons who inspected for ACM and who will design or carry out response actions, except for operations and maintenance with respect to the ACM, a statement that the person has current license(s) and training;

9. A detailed description, which shall be updated as response actions are completed, in the form of a blueprint, diagram, or in writing of any ACM or suspected ACM assumed to be ACM which remains in the school once response actions are undertaken pursuant to 454 CMR 28.13(6);

28.13: continued

10. A plan for reinspection under 454 CMR 28.13(2), a plan for operations and maintenance activities under 454 CMR 28.13(7) and a plan for periodic surveillance under 454 CMR 28.13(8), a description of the recommendation made by the management planner regarding additional cleaning of 454 CMR 28.13(7)(b)2. as part of an operations and maintenance program, and the response of the local education agency to the recommendations issued;

11. A description of steps taken to inform workers and building occupants, or their legal guardians, about inspections, reinspections, response actions, and post-response action activities, including periodic reinspection and surveillance activities that are planned or in progress;

12. An evaluation of the resources needed to complete response actions successfully and carry out reinspection, operations and maintenance, periodic surveillance and training; and

13. With respect to each consultant who contributed to the management plan, the name, license and current training of the individual.

(e) Upon submission of a management plan to the Department, a local education agency shall maintain in its administrative office a complete, updated copy of a management plan for each school under its administrative control or direction.

1. The management plans shall be available, without cost or restriction, for inspection by representatives of EPA and the State, the public, including teachers, other school personnel and their representatives, and parents. The local education agency may charge a reasonable cost to make copies of management plans.

2. Each school shall maintain in its administrative office a complete, updated copy of the management plan for that school. Management plans shall be available for inspection, without cost or restriction, to workers before work begins in any area of a school building. The school shall make management plans available upon demand for inspection to representatives of EPA and the State. The school shall make management plans available to the public, including parents, teachers, and other school personnel and their representatives within five working days after receiving a request for inspection. The school may charge a reasonable cost to make copies of the management plan.

3. Upon submission of its initial management plan to the Department and at least once each school year, the local education agency shall notify in writing parents, teachers, and employee organizations of the availability of management plans and shall include in the management plan a description of the steps taken to notify such organizations, and a dated copy of the notification. In the absence of any such organizations for parents, teachers, or employees, the local education agency shall provide written notice to that relevant group of the availability of management plans and shall include in the management plan a description of the steps taken to notify such groups, and a dated copy of the notification.

(f) Records required under 454 CMR 28.13(10) shall be made by local education agencies and maintained as part of the management plan.

(g) Each management plan must contain a true and correct statement, signed by the individual designated by the local education agency under 454 CMR 28.13(1), which certifies that the general local education agency responsibilities, as stipulated by 454 CMR 28.13(1) have been met or will be met.

(10) Recordkeeping.

(a) Records required under 454 CMR 28.13(10) shall be maintained in a centralized location in the administrative office of both the school and the local education agency as part of the management plan. For each homogeneous area where all ACM has been removed, the local education agency shall ensure that such records are retained for three years after the next reinspection required under 454 CMR 28.13(2)(b)1.

(b) For each preventive measure and response action taken for friable and non-friable ACM and friable and non-friable suspected ACM assumed to be ACM, the local education agency shall maintain as part of the management plan the following:

1. A detailed written description of the measure or action, including methods used, the location where the measure or action was taken, reasons for selecting the measure or action, start and completion dates of the work, names and addresses of all contractors involved, and if applicable, their current license and training certificate, and if ACM is removed, the name and location of storage or disposal site of the ACM; and

28.13: continued

2. The name, signature, current license and training certificate of any person collecting any air sample required to be collected at the completion of certain response actions specified by 454 CMR 28.13(6)(h), the locations where samples were collected, date of collection, the name and address of the Asbestos Analytical Service analyzing the samples, the date of analysis, the results of the analysis, the method of analysis, the name and signature of the person performing the analysis, and a statement that the Asbestos Analytical Service meets the applicable requirements of 454 CMR 28.13(6)(h)3.

(c) For each person required to be trained under 454 CMR 28.13(8)(a)1. and 2., the local education agency shall record the person's name and job title, the date that training was completed by that person, the location of the training, and the number of hours completed in such training.

(d) For each time that periodic surveillance under 454 CMR 28.13(8)(b) is performed, the local education agency shall record the name of each person performing the surveillance, the date of the surveillance, and any changes in the conditions of the materials.

(e) For each time that cleaning under 454 CMR 28.13(7)(b) is performed, the local education agency shall record the name of each person performing the cleaning, the date of such cleaning, the locations cleaned, and the methods used to perform such cleaning.

(f) For each time that an operations and maintenance activity under 454 CMR 28.13(7)(c) of is performed, the local education agency shall record the name of each person performing the activity, the start and completion dates of the activity, the locations where such activity occurred, a description of the activity including preventive measures used, and if ACM is removed, the name and location of the storage or disposal site of the ACM.

(g) For each time that major asbestos activity under 454 CMR 28.13(7) is performed, the local education agency shall record the name and signature, current license and training certificate of each person performing the activity, the start and completion dates of the activity, the locations where such activity occurred, a description of the activity, including preventive measures used, and if ACM is removed, the name and location of the storage or disposal site of the ACM.

(h) For each fiber release episode under 454 CMR 28.08(6), the local education agency shall record the date and location of the episode, the method of repair, preventive measures or response action taken, the name of each person performing the work, and if ACM is removed, the name and location of the storage or disposal site of ACM.

(11) Warning Labels.

(a) The local education agency must attach a warning label adjacent to any friable or nonfriable ACM or suspected ACM assumed to be ACM located in routine maintenance areas (such as boiler and mechanical rooms) and storage areas at each school building. These labels must be placed adjacent to the following locations:

1. Friable ACM for which the response was any action other than removal; and
2. ACM for which no response action was carried out.

(b) All labels must be of large size and prominently displayed in readily visible locations so that persons may read the signs and take necessary protective steps before entering the area. All labels must remain posted until the ACM that is labeled is removed.

(c) The warning label shall read, in bright colors, as follows:

CAUTION: ASBESTOS, HAZARDOUS, DO NOT DISTURB WITHOUT PROPER TRAINING AND EQUIPMENT.

(d) The local education agency must post these labels in a bilingual form whenever it determines that a significant employee population requires a translated format.

(12) Exclusions.

(a) A local education agency shall not be required to perform an inspection under 454 CMR 28.13(2)(a) in any sampling area or homogeneous area of a school building where any of the following conditions apply.

28.13: continued

1. A licensed inspector has determined that, based on sampling records, friable ACM was identified in that homogeneous or sampling area during an inspection conducted before December 14, 1987. The inspector must sign and date a statement to that effect with his or her current license and training certificate and if applicable, accreditation number and, within 30 days after such determination, submit a copy of the statement to the person designated under 454 CMR 28.13(1) for inclusion in the management plan. However, a licensed inspector must assess the friable ACM under 454 CMR 28.13(6).

2. A license inspector has determined, based on sampling records, that non-friable ACM was identified in that homogeneous or sampling area during an inspection conducted before December 14, 1987. The inspector must sign and date a statement to that effect with his or her current license and training certificate and within 30 days after such determination, submit a copy of the statement to the person designated under 454 CMR 28.13(2)(a) for inclusion in the management plan. However, an inspector must identify whether material that was non-friable has become friable since that previous inspection and must assess the newly friable ACM under 454 CMR 28.13(5).

3. Based on sampling records and inspection records, a licensed inspector has determined that no ACM is present in the homogeneous or sampling area and the records show that the area was sampled, before December 14, 1987, under 454 CMR 28.13(2)(a), in a random manner and with a sufficient number of samples to reasonably ensure that the area is not ACM.

a. The inspector must sign and date a statement, with his or her current license and training certificate, that the homogeneous or sampling area determined not to be ACM was sampled in substantial compliance with 454 CMR 28.13(2)(a);

b. Within 30 days after the inspector's determination, the local education agency must submit a copy of the inspector's statement to the Department and must include the statement in the management plan for that school.

4. A licensed inspector has determined, based on records of an inspection conducted before December 14, 1987, that suspected ACM identified in that homogeneous or sampling area is assumed to be ACM. The inspector must sign and date a statement to that effect, with his or her current license and training certificate, within 30 days of such determination, submit a copy of the statement to the person designated under 454 CMR 28.13(5) for inclusion in the management plan. However, an inspector must identify whether material that was non-friable suspected ACM assumed to be ACM has become friable since the previous inspection and must assess the newly friable material and previously identified friable suspected ACM assumed to be ACM under 454 CMR 28.13(5).

5. Based on inspection records and contractor and clearance records, an inspector has determined that no ACM is present in the homogeneous or sampling area where asbestos removal operations have been conducted before December 14, 1987, and must sign and date a statement to that effect and include his or her current license and training certificate and, if applicable, accreditation number. The local education agency must submit a copy of the statement to the Department and must include the statement in the management plan for that school.

6. An architect or project engineer responsible for the construction of a new school building built after October 12, 1988, or a licensed inspector signs a statement that no ACM was specified as a building material in any construction document for the building, or, to the best of his or her knowledge, no ACM was used as a building material in the building. The local education agency must submit a copy of the signed statement of the architect, project engineer, or licensed inspector to the Department and must include the statement in the management plan for that school.

(b) The exclusions, under 454 CMR 28.12, from conducting the inspection under 454 CMR 28.13(2)(a), must apply only to homogeneous or sampling areas of a school building that were inspected and sampled before October 17, 1987. The local education agency must conduct an inspection under 454 CMR 28.13(2)(a) of all areas inspected before October 17, 1987 that were not sampled or were not assumed to be ACM.

28.13: continued

(c) If ACM is subsequently found in a homogeneous or sampling area of a local education agency that had been identified as receiving an exclusion by an inspector under 454 CMR 28.13(12)(a)3. or 4., or by an architect, project engineer or licensed inspector under 454 CMR 28.13(12)(a)6. the local education agency shall have 180 days following the date of identification of ACM to comply with 454 CMR 28.00.

28.14: Work Practices for Asbestos Cement Pipe (ACP)

(1) Asbestos Cement Pipe Maintenance and Repair Requirements.

(a) Public and Private Utility Contractors or other entities who have completed the "eight-hour OSHA Class II Asbestos Training: Asbestos Cement Pipe (ACP) Worker Safety" course found at 454 CMR 28.05 or a course similar in length and content reviewed and approved in writing by the Department shall comply with the following provisions and procedures.

1. Complete a survey as required under 310 CMR 7.15(12A)(b).

2. Asbestos-cement pipe shall be handled in a manner that will minimize the risk of making it friable ACM or releasing asbestos dust into the environment, and with minimal disturbance.

3. Expose the asbestos cement pipe without disturbing the pipe. Excavate no closer than six inches of the pipe. Carefully uncover the remainder of the soil surrounding the pipe by hand or with a shovel.

4. An assessment shall be made by a person trained per 454 CMR 28.05(9) to determine if the pipe is damaged, cracked or broken.

a. Not Damaged (intact and not deteriorated):

i Place six-mil thick polyethylene ("poly") sheeting under the asbestos cement pipe to prevent soil contamination.

ii. Adequately wet the asbestos cement pipe with amended water using surfactant or liquid soap before and during removal to avoid creating airborne dust.

iii. Separate the asbestos cement pipe at the nearest coupling (bell or compression fitting).

iv. Slide the pipe apart at the joints (no saw cutting) or use other methods that do not cause the pipe to break, become friable or otherwise create the potential to release asbestos fibers.

v. Wrap the wet asbestos cement pipe and other debris in two layers of six-mil polyethylene sheeting, seal with duct tape and label in accordance with all applicable regulatory requirements. This can be done in the trench or adjacent to the trench.

vi. If the trench is filled with water, the placement of polyethylene sheeting is not required.

vii. Manage wrapped asbestos cement pipe, polyethylene sheeting and any other material contaminated with visible asbestos debris as asbestos-containing waste (ACW) in accordance with 310 CMR 7.15: *U Asbestos* and 310 CMR 19.061: *Special Waste*

b. Damaged (deteriorated or not intact) or when cutting or mechanical breakage (*e.g.*, with saws, snap or blade cutting, and/or tapping) is necessary:

i. Place six-mil thick polyethylene sheeting under the asbestos cement pipe to prevent soil contamination.

ii. Adequately wet asbestos cement pipe with amended water where cutting or breaking will occur.

iii. Saw cutting of asbestos cement pipe shall only be conducted with a HEPA-shrouded vacuum attachment or wet cutting equipment, unless it is conducted within a small enclosure that isolates the area in which the saw cutting is being conducted to prevent the release of asbestos fibers to ambient air.

iv. Wrap wet asbestos cement pipe in two layers of six-mil polyethylene sheeting, seal with duct tape and label. Work shall be done either in the trench or adjacent to the trench.

v. Manage wrapped asbestos cement pipe, polyethylene sheeting and any other material contaminated with visible asbestos debris as asbestos-containing waste (ACW) in accordance with 310 CMR 7.15: *U Asbestos* and 310 CMR 19.061: *Special Waste*

28.14: continued

c. For activities that disturb friable ACM, no visible emissions shall be discharged to the outside air during the collection, processing, packaging or transporting of any ACM or ACW.

5. The final visual inspection shall be satisfied by complying with the following requirements:

a. The visual inspection shall be performed by a person trained per 454 CMR 28.05(9).

b. The person conducting the final visual inspection shall:

c. Inspect the work area to ensure there was no visible debris remaining:

i. In the excavation trench;

ii. In soil excavated from the trench;

iii. In the surrounding area adjacent to the trench after the removal of the asbestos cement pipe; and

iv. On any tools used during the removal/repair/replacement activities.

d. Ensure that all ACM has been removed for proper storage/disposal.

e. Sign and date the documentation of the final inspection as evidence that the inspection was performed and that the condition of "no remaining visible debris" was met. Owners/operators shall keep such documentation at their regular place of business for two years from the date of final visual inspection and provide it to the Department upon request.

28.15: Recordkeeping

(1) Maintenance, Submission and Retention of Records. Certified Asbestos Training Providers, Contractors, Analytical Service Provider, Asbestos Consulting Services and employers of Operations and Maintenance Workers must maintain the records as indicated at 454 CMR 28.15(2) through (4) and make said records available to the Director upon request.

(2) Entities must provide photocopies of such records or documents within ten business days of receipt of a written request from the Director.

(3) Records and documents required to be kept by 454 CMR 28.10 must be retained for a period of 30 years from the date of project or activity completion, except that records required to be kept by 454 CMR 28.11(2) must be kept for a period of at least 15 years.

(4) Entities or persons ceasing to do business or relocating the principal place of business must notify the Director in writing within 30 days of such event. The Director, on receipt of such notification, may instruct that the records be surrendered to the Department or may specify a repository for such records. The entity or person must comply with the Director's instructions within 60 days.

28.16: Administrative License and Certificate Actions/Denial, Revocation, Suspension or Refusal to Renew a License

(1) General Administrative Proceedings. The Director may deny, revoke, suspend or refuse to renew a license or certificate issued pursuant to 454 CMR 28.00 upon finding of sufficient cause. License and Certificate applicants or holders must be advised by the Director in writing of the proposed denial, revocation, suspension or refusal to renew and the reasons therefore. Said parties have the right to appeal the Director's determination through an administrative hearing in accordance with the provisions of M.G.L. c. 30A, and 801 CMR 1.00: *Standard Adjudicatory Rules of Practice and Procedure* by submitting a written request for such hearing within 14 calendar days of receiving notice of such administrative action.

(2) Sufficient Cause. The following shall be sufficient cause for the Director's denial, revocation, suspension or refusal to renew a license or certificate issued pursuant to 454 CMR 28.00:

(a) False statements in the application.

(b) Omission or falsification of documentation or information required to be submitted to the Director pursuant to any provisions of 454 CMR 28.00.

28.16: continued

(c) Failure to comply with the applicable provisions of M.G.L. c. 149 or M.G.L. c. 111F, 454 CMR 28.00, or rules or orders issued thereunder.
(d) Failure to comply with laws, rules and regulations relating to occupational or public health and safety and environmental protection.
(e) Failure to maintain records required by 454 CMR 28.00 or documents incorporated by reference herein or make them available to the Director upon request.
(f) Outstanding debt to the Department.
(g) Failure to make corrective actions based on enforcement issued by a regulatory agency, including, but not limited to, notices of noncompliance, notices of responsibility, notices of intent to assess an administrative penalty, orders, consent orders, court judgments, written warnings, cease work orders, settlement agreements, and civil citations.
(h) In the case of Certified Asbestos Training Providers, or applicants for certification as Asbestos Training Providers, the following shall also constitute sufficient cause:
1. Failure to demonstrate the ability to provide the training courses for which the applicant seeks to be certified in compliance with the requirements of 454 CMR 28.09;
2. Failure to provide or maintain the standards of training required by 454 CMR 28.00; or
3. Failure to provide minimum instruction required by 453 CMR 28.00.
(i) In the case of Certified Asbestos Consulting Services and Asbestos Consultants or applicants for certification thereto, the following shall also constitute sufficient cause:
1. Gross technical errors or errors of judgment;
2. Failure to properly execute authorized consultative activities;
(j) In the case of certified providers of Analytical Services, or applicants for certification as providers of Analytical Services, the following shall also constitute sufficient cause:
1. Failure to maintain successful participation in required proficiency testing programs;
2. Gross technical errors or errors of judgment relating to activities covered by the License; and
3. Loss of professional accreditation or license, where such is a required qualification.
(k) Any other cause affecting the responsibility of the license or certificate holder which the Director determines to be of such serious and compelling nature as to warrant denial, suspension, revocation or refusal to renew.

(3) Conditional Licenses and Certificates, Consent Agreements and Probation. The Director may issue licenses and certificates subject to conditions specified therein, enter into consent agreements with the holder or place the license or certificate holder on probation for sufficient cause.

(4) Order of Summary Suspension and Hearing. The Director may summarily suspend a license or certificate on an emergency basis if, in his or her determination, the actions of the license or certificate holder present an immediate and serious threat to the health, safety or welfare of the workers or the general public. The Director shall issue a written order of summary suspension, stating the reason(s) therefor. The summary suspension order shall also notify the license or certificate holder of the date, time, and place of a hearing on the necessity for the summary suspension. Such hearing shall be held within seven days of issuance of the summary suspension order and shall be conducted in accordance with the provisions of M.G.L. c. 30A, and 801 CMR 1.00: *Standard Adjudicatory Rules of Practice and Procedure*. At the license or certificates holder's request, the Director may reschedule this hearing to a date and time mutually agreeable to the license or certificate holder and the Director. Any rescheduling of the hearing granted at the license or certificate holder's request shall not operate to lift the summary suspension order. Summary suspensions may be issued in conjunction with license or certificate revocations, suspensions, or refusals to renew.

28.17: Cease and Desist Orders

(1) General. The Director, upon determination that there is a violation of any work place standard which compromises the protection of the general public or the occupational health and safety of workers, or of any standard or requirement for licensure or certification, may order any worksite to be closed by way of the issuance of a Cease and Desist order enforceable in the appropriate courts of the Commonwealth. For purposes of such Cease and Desist orders, the worksite may include the area where asbestos related work is being performed and other areas of a facility or location which the Director determines may be hazardous to the health and safety of workers and the general public as a result of such asbestos work.

28.17: continued

(2) Form and Content of Order. Cease and Desist Orders shall be in writing and shall, at a minimum, contain the following:

(a) A description of the premises or work area to which the order applies;

(b) Violations or conditions serving as the basis for issuing the order; and

(c) Any conditions that must be met or remedial action to be taken before the order can be lifted.

(3) Issuance of Cease and Desist Orders. A Cease and Desist order shall be effective immediately upon delivery in hand or by certified mail to any Responsible Person or agent of the contractor or entity performing the work. A copy of the order shall also be delivered in hand or by certified mail to the facility owner or his or her agent to the address on record with the Secretary of State. A party objecting to such order must comply with such order but may make a written request for a hearing pursuant to M.G.L. c. 30A within ten days following service of the order.

(4) Posting of the Worksite. At the time the Cease and Desist Order becomes effective, the Director shall cause the worksite to be conspicuously posted, such posting to contain the content of the Cease and Desist Order and any other information the Director determines necessary to secure the worksite and to adequately warn of hazards. Notices must remain posted until the order is lifted.

(5) Access to Closed Worksite. Access to the worksite closed by a cease and desist order must be restricted to the Department and other persons authorized by the Director.

(6) Rescission of Cease and Desist Orders. The Director may rescind a Cease and Desist Order following his or her determination that the conditions which resulted in the issuance of said Cease and Desist Orders have been corrected and that all administrative orders or conditions issued in connection with the same have been complied with. Notices rescinding Cease and Desist Orders, which shall be in writing, shall be delivered in hand or by certified mail to any Responsible Person or agent of the contractor or entity performing the work. A copy of the rescission notice shall also be delivered in hand or by certified mail to the facility owner or his or her agent.

(7) Administrative Orders. In accordance with M.G.L c. 149, §§ 6 and 6F½, the Director or his or her representative may issue orders for the correction of unsafe conditions at Asbestos work sites. Persons, firms or other entities who fail to comply with said orders shall be subject to the penalties provided by M.G.L c. 149, §§ 6, 6F and 6F½, and 454 CMR 29.00: *Civil Administrative Penalties*.

28.18: Responsibility For Compliance; Penalties

(1) Any person, firm, corporation, or other entity performing work subject to the requirements of 454 CMR 28.00, including, without limitation, Asbestos Contractors, Asbestos Workers, Supervisors, and, Asbestos Consulting Services, Asbestos Consultants, Providers of Asbestos Training and Analytical Service Provider must be responsible for compliance with the provisions thereof.

(2) Any person, firm, corporation, or other entity who or which violates the provisions of 454 CMR 28.00 shall be subject to the administrative sanctions specified herein and any civil penalty allowed by M.G.L. c. 149, § 6F½, the laws of the Commonwealth, and, pursuant to M.G.L. c. 149, § 6F, may be punished by a fine of not less than $100 and not more than $5000 for each offense.

28.19: Severability

If any provision of 454 CMR 28.00 shall be held inconsistent with the laws of the Commonwealth, or held unconstitutional, either on its face, or as applied, the inconsistency or unconstitutionality shall not affect the remaining provisions.

28.20: Fees

A schedule of fees is available at the Department's website.

REGULATORY AUTHORITY

454 CMR 28.00: M.G.L. c. 149, §§ 6 through 6G.

Asbestos Identification Laboratory
165U New Boston St., Ste 271
Woburn, MA. 01801
Bulk Asbestos Analysis by Polarized Light Microscopy
EPA Method: 600/R-93/116

NVLAP®
Lab Code: 200919-0

1/23/2014

Universal Environmental Consultants
12 Brewster Road
Framingham, MA 01702
Suite/Apt

RE: Batch 2384
Results of Asbestos Project: High School, Millbury, MA

Dear Ammar M. Dieb,

Asbestos Identification Laboratory has completed the analysis of the bulk samples Work Received: 1/22/2014 from your office. These results represent the bulk samples from the above-referenced project. :

The information and analysis contained in this report have been generated using the EPA /600/R-93/116 Method for the Determination of Asbestos in Bulk Building Materials. Materials or products that contain more than 1% of any kind or combination of asbestos are considered an asbestos containing building material as determined by the EPA. This Polarized Light Microscope (PLM) technique may be performed either by visual estimation or point counting. Point counting provides a determination of the area percentage of asbestos in a sample. If the asbestos is estimated to be less than 10% by visual estimation of friable material, the determination may be repeated using the point counting technique. The results of the point counting supersede visual PLM results. Results in this report only relate to the items tested. This report may not be used by the customer to claim product endorsement by NVLAP or any other U.S. Government Agency.

- NVLAP Lab Code: 200919-0
- Massachusetts Certification License: AA000208
- State of Connecticut, Department of Public Health Approved Environmental Laboratory Registration# PH-0142
- State of Maine, Department of Environmental Protection Asbestos Analytical Laboratory License Number LB-0078(Bulk) LA-0087(Air)
- State of Rhode Island and Providence Plantations Department of Health Certification: AAL-121

Thank you Ammar M. Dieb for your business.

Michael Manning

Analyzed by: Michael Manning
Owner/Director
(781)932-9600

UEC universal environmental consultants
12 Brewster Road
Framingham, MA 01702
Phone: 508.628.5486
Fax: 508.628.5488

CHAIN OF CUSTODY

BUILDING / SITE NAME: High school
WORK AREA:
TOWN / CITY: Millburg
STATE: MA

Analysis Type	Turnaround Time (x)				
	6-8 Hr	12 Hr	24 Hr	48 Hr	72 hr
TEM / AHERA					
TEM / Level II					
TEM / Dust					
TEM / Bulk					
TEM / Water					
PLM			X		
Mold					
Other:					

Specific Project Notes

SAMPLE ID	MATERIAL DESCRIPTION	SAMPLE LOCATION	START	STOP	TIME	L/MIN	VOLUME
1	Black sink coating	science prep room					
2	" "	" "					
3	Int window glaze	science prep room					
4	" "	main office					

SAMPLED BY: Jaga Berta 1-21-14 DATE/TIME:
RECEIVED BY: DATE/TIME:
RELINQUISHED BY: DATE/TIME:
RECEIVED IN LAB BY: Sabrina 1/22/14 DATE/TIME:

Asbestos Identification Laboratory
165U New Boston St., Ste 271
Woburn, MA. 01801
Bulk Asbestos Analysis by Polarized Light Microscopy
EPA Method: 600/R-93/116

NVLAP
Lab Code: 200919-0

Results Table

Sample ID	Lab ID	Material	Sample Location	Analytical Results
1	30957	Black Sink Coating	Science Prep Room	No Asbestos Detected
2	30958	Black Sink Coating	Science Prep Room	No Asbestos Detected
3	30959	Int. Window Glaze	Science Prep Room	No Asbestos Detected
4	30960	Int. Window Glaze	Main Office	No Asbestos Detected

Asbestos Identification Laboratory
165U New Boston St., Ste 271
Woburn, MA. 01801
Bulk Asbestos Analysis by Polarized Light Microscopy
EPA Method: 600/R-93/116

NVLAP
Lab Code: 200919-0

Results for Client Project: High School, Millbury, MA, Batch# 2384

Work Received: 1/22/2014 Date Sampled: 1/21/2014 Results Sent: 1/23/2014 9:37:01 AM

Field_ID: 1 Material: Black Sink Coating Color: Black Location: Science Prep Room Sample# 30957 NON=100 None Detected

Field_ID: 2 Material: Black Sink Coating Color: Black Location: Science Prep Room Sample# 30958 NON=100 None Detected

Field_ID: 3 Material: Int. Window Glaze Color: Black Location: Science Prep Room Sample# 30959 NON=100 None Detected

Field_ID: 4 Material: Int. Window Glaze Color: Black Location: Main Office Sample# 30960 NON=100 None Detected

End of Report

Legend (All sample results represent percentages EX: 001 = 1%) TR(Trace) = < 1%
Asbestos Minerals: Chrysotile=CHR, Amosite=AMO, Crocidolite=CRO, Actinolite=ACT, Tremolite=TRE, Anthophylite=ANT
Fibrous Materials: Fiberglass=FBG, Mineral Wood=MNW, Cellulose=CEL, Hair=HAR, Synthetic=SYN, Other=OTH, Non-Fibrous=NON

Asbestos Identification Laboratory

165 New Boston St., Ste 227
Woburn, MA 01801
781-932-9600

Web: www.asbestosidentificationlab.com
Email: mikemanning@asbestosidentificationlab.com

Batch: 40275

NVLAP®
Lab Code: 200919-0

February 28, 2019

Ammar Dieb
Universal Environmental Consultants
12 Brewster Road
Framingham, MA 01702

Project Number:
Project Name: High School, Millbury, MA

Date Sampled: 2019-02-26
Work Received: 2019-02-27
Work Analyzed: 2019-02-28

Analysis Method: BULK PLM ANALYSIS EPA/600/R-93/116

Dear Ammar Dieb,

Asbestos Identification Laboratory has completed the analysis of the samples from your office for the above referenced project .

The information and analysis contained in this report have been generated using the EPA /600/R-93/116 Method for the Determination of Asbestos in Bulk Building Materials. Materials or products that contain more than 1% of any kind or combination of asbestos are considered an asbestos containing building material as determined by the EPA. This Polarized Light Microscope (PLM) technique may be performed either by visual estimation or point counting. Point counting provides a determination of the area percentage of asbestos in a sample. If the asbestos is estimated to be less than 10% by visual estimation of friable material, the determination may be repeated using the point counting technique. The results of the point counting supersede visual PLM results. Results in this report only relate to the items tested. This report may not be used by the customer to claim product endorsement by NVLAP or any other U.S. Government Agency.

Laboratory results represent the analysis of samples as submitted by the customer. Information regarding sample location, description, area, volume, etc., was provided by the customer. Asbestos Identification Laboratory is not responsible for sample collection activities or analytical method limitations. Unless notified in writing to return samples, Asbestos Identification Laboratory discards customer samples after 30 days. Samples containing subsamples or layers will be analyzed separately when applicable. Reports are kept at Asbestos Identification Laboratory for three years. This report shall not be reproduced, except in full, without the written consent of Asbestos Identification Laboratory.

- NVLAP Lab Code: 200919-0
- Massachusetts Certification License: AA000208
- State of Connecticut, Department of Public Health Approved Environmental Laboratory Registration Number: PH-0142
- State of Maine, Department of Environmental Protection Asbestos Analytical Laboratory License Number: LB-0078(Bulk) LA-0087(Air)
- State of Rhode Island and Providence Plantations. Department of Health Certification: AAL-121
- State of Vermont, Department of Health Environmental Health License AL934461

Thank you Ammar Dieb for your business.

Michael Manning
Owner/Director

February 28, 2019

Ammar Dieb
Universal Environmental Consultants
12 Brewster Road
Framingham, MA 01702

Project Number:
Project Name: High School, Millbury, MA

Date Sampled: 2019-02-26
Work Received: 2019-02-27
Work Analyzed: 2019-02-28

Analysis Method: BULK PLM ANALYSIS EPA/600/R-93/116

FieldID / LabID	Material	Location	Color	Non-Asbestos %	Asbestos %
1 / 446340	Textured Ceiling Skim Coat	Auditorium	white	Non-Fibrous 100	None Detected
2 / 446341	Textured Ceiling Skim Coat	Auditorium	white	Non-Fibrous 100	None Detected
3 / 446342	Textured Ceiling Skim Coat	Auditorium	white	Non-Fibrous 100	None Detected
4 / 446343	Textured Ceiling Skim Coat	Auditorium	white	Non-Fibrous 100	None Detected
5 / 446344	Textured Ceiling Skim Coat	Auditorium	white	Non-Fibrous 100	None Detected

Thursday 28 February
Analyzed by: Erik Gongas

End of Report

Batch: 40275

CHAIN OF CUSTODY

Universal Environmental Consultants
12 Brewster Road
Framingham, MA 01702
Tel: (508) 628-5486 - Fax: (508) 628-5488
adieb@uec-env.com

PLM

24-hour TAT

Town/City: Millburg, MA Building Name High School

Sample	Result	Description of Material	Sample Location
1		Textured ceiling skim coat	Auditorium
2		"	"
3		"	"
4		"	"
5		"	"

Reported By: Jason Brewster Date: 2-26-19 Due Date: ----------

Received By: [signature] Date: 2/27/19

Asbestos Identification Laboratory

165 New Boston St., Ste 227
Woburn, MA 01801
781-932-9600

Web: www.asbestosidentificationlab.com
Email: mikemanning@asbestosidentificationlab.com

Batch: 52005

NVLAP®
Lab Code: 200919-0

April 08, 2020

Ammar Dieb
Universal Environmental Consultants
12 Brewster Road
Framingham, MA 01702

Project Name: *Millbury High School*
Project Number:
Date Sampled: 2020-04-03
Work Received: 2020-04-07
Work Analyzed: 2020-04-07

Analysis Method: BULK PLM ANALYSIS EPA/600/R-93/116

Dear Ammar Dieb,

Asbestos Identification Laboratory has completed the analysis of the samples from your office for the above referenced project. The information and analysis contained in this report have been generated using the EPA /600/R-93/116 Method for the Determination of Asbestos in Bulk Building Materials. Materials or products that contain more than 1% of any kind or combination of asbestos are considered an asbestos containing building material as determined by the EPA. This Polarized Light Microscope (PLM) technique may be performed either by visual estimation or point counting. Point counting provides a determination of the area percentage of asbestos in a sample. If the asbestos is estimated to be less than 10% by visual estimation of friable material, the determination may be repeated using the point counting technique. The results of the point counting supersede visual PLM results. Results in this report only relate to the items tested. This report may not be used by the customer to claim product endorsement by NVLAP or any other U.S. Government Agency.
Laboratory results represent the analysis of samples as submitted by the customer. Information regarding sample location, description, area, volume, etc., was provided by the customer. Asbestos Identification Laboratory is not responsible for sample collection activities or analytical method limitations. Unless notified in writing to return samples, Asbestos Identification Laboratory discards customer samples after 30 days. Samples containing subsamples or layers will be analyzed separately when applicable. Reports are kept at Asbestos Identification Laboratory for three years. This report shall not be reproduced, except in full, without the written consent of Asbestos Identification Laboratory.

- NVLAP Lab Code: 200919-0
- Massachusetts Certification License: AA000208
- State of Connecticut, Department of Public Health Approved Environmental Laboratory Registration Number: PH-0142
- State of Maine, Department of Environmental Protection Asbestos Analytical Laboratory License Number: LB-0078(Bulk) LA-0087(Air)
- State of Rhode Island and Providence Plantations. Department of Health Certification: AAL-121
- State of Vermont, Department of Health Environmental Health License AL934461

Thank you Ammar Dieb for your business.

Michael Manning
Owner/Director

April 08, 2020

Ammar Dieb
Universal Environmental Consultants
12 Brewster Road
Framingham, MA 01702

Project Name: *Millbury High School*
Project Number:
Date Sampled: 2020-04-03
Work Received: 2020-04-07
Work Analyzed: 2020-04-07

Analysis Method: BULK PLM ANALYSIS EPA/600/R-93/116

FieldID / LabID	Material	Location	Color	Non-Asbestos %	Asbestos %
1 / 579877	2x4 SAT	Cafeteria	gray	Mineral Wool 40 Cellulose 40 Non-Fibrous 20	None Detected
2 / 579878	2x4 SAT	C132	gray	Mineral Wool 40 Cellulose 40 Non-Fibrous 20	None Detected
3 / 579879	2x4 SAT	A207	gray	Mineral Wool 40 Cellulose 40 Non-Fibrous 20	None Detected
4 / 579880	Science Counter Top	A203	black	Non-Fibrous 100	None Detected
5 / 579881	Science Counter Top	A207	black	Non-Fibrous 100	None Detected
6 / 579882	Joint Compound	Hallway Soffit	white	Non-Fibrous 100	None Detected
7 / 579883	Joint Compound	Cafeteria Soffit	white	Non-Fibrous 100	None Detected
8 / 579884	Beige 12x12 VFT	Cafeteria	tan	Non-Fibrous 100	None Detected
9 / 579885	Beige 12x12 VFT	A207	tan	Non-Fibrous 100	None Detected
10 / 579886	Beige 12x12 VFT	C132	tan	Non-Fibrous 100	None Detected
11 / 579887	Beige 12x12 VFT	A203	tan	Non-Fibrous 100	None Detected
12 / 579888	Yellow Glue	Cafeteria	yellow	Non-Fibrous 100	None Detected
13 / 579889	Yellow Glue	A207	yellow	Non-Fibrous 100	None Detected
14 / 579890	Black Mastic	C132	black	Non-Fibrous 100	None Detected

FieldID LabID	Material	Location	Color	Non-Asbestos %	Asbestos %
15 579891	Black Mastic	A203	black	Non-Fibrous 100	None Detected

Wednesday 08 April

End of Report

Analyzed by:

Batch: 52005

CHAIN OF CUSTODY

Universal Environmental Consultants
12 Brewster Road
Framingham, MA 01702
Tel: (508) 628-5486 - Fax: (508) 628-5488
adieb@uec-env.com

PLM
24-hour TAT

Town/City: Millbury, MA Building Name High School

Sample	Result	Description of Material	Sample Location
1		2x4 SAT.	Cafeteria
2		" "	C 132
3		" "	A 207
4		Science Counter top	A 203
5		" "	A 207
6		Joint Compound	Hallway Soffit
7		" "	Cafeteria Soffit
8		Beige 12x12 VFT	Cafeteria
9		" "	A 207
10		" "	C 132
11		" "	A 203
12		Yellow glue	Cafeteria
13		" "	A 207
14		Black mastic	C 132
15		" "	A 203

Reported By: Jason Becotte Date: 4-3-20 Due Date: ----------

Received By: [signature] Date: 4/7/20

Recommended Work Practices for Removal of Resilient Floor Coverings

Supersedes Recommended Work Practices Published in August 2004

JANUARY 2018

RFCi
Resilient Floor Covering Institute

115 Broad Street, Suite 201, LaGrange, GA 30240 | phone: 706.882.3833
fax: 706.882.3880 | www.rfci.com

RFCI
Resilient Floor Covering Institute

Recommended Work Practices for Removal of Resilient Floor Coverings

WARNING 

Do not sand, dry sweep, dry scrape, drill, saw, beadblast, or mechanically chip or pulverize existing resilient flooring, backing, lining felt, asphaltic "cutback" adhesive, or other adhesive.

These products may contain asbestos fibers and/or crystalline silica.

Avoid creating dust. Inhalation of such dust is a cancer and respiratory tract hazard. Smoking by individuals exposed to asbestos fibers greatly increases the risk of serious bodily harm.

Unless positively certain that the product is a non-asbestos-containing material, you must presume it contains asbestos. Regulations may require that the material be tested to determine asbestos content.

Similarly, absent testing data or objective evidence that work with the product will **not** result in exposures to crystalline silica greater than allowed by applicable regulations, protection may be required.

RFCI's Recommended Work Practices for Removal of Resilient Floor Coverings are a defined set of instructions addressed to the task of removing all resilient floor covering structures.

January 2018

IN CANADA

The Recommended Work Practices for the Removal of Resilient Floor Covering Materials are intended for use in the United States. The work practices for the removal of in-place resilient floor coverings and associated adhesives described in this publication have not been reviewed with either National or Provincial officials in Canada to determine their applicability when asbestos-containing or assumed to be asbestos-containing resilient floor covering materials are encountered .
These work practices are recommended when removing resilient floor covering and its associated adhesives that have been determined not to be asbestos-containing.

To determine what are acceptable work practices and the associated requirements for the removal of resilient floor covering that is assumed to contain asbestos or has been determined to contain asbestos, you should contact your local or provincial officials.

As an alternative to the removal of any in-place resilient floor covering materials, refer to page 10 (Alternative to Removal of Existing Resilient Floor Coverings).

TABLE OF CONTENTS

- IMPORTANT INFORMATION CONCERNING EXISTING FLOOR COVERING INSTALLATIONS.....4
- IMPORTANT INFORMATION: MOLD AND MILDEW.....5
- OSHA REQUIREMENTS.....6
- EPA LEAD-BASED PAINT REQUIREMENTS.....8
- GENERAL RULES FOR REMOVAL OF RESILIENT FLOOR COVERING.....9
- ALTERNATIVES TO REMOVAL OF EXISTING RESILIENT FLOOR COVERINGS
    - Installing resilient floor covering over existing resilient floor covering.....10
    - Use of embossing leveler.....10
    - Installing resilient floor covering over new underlayment.....10
- REMOVAL OF RESILIENT SHEET FLOORING
    - Supplies and tools.....11
    - Fully-adhered resilient sheet flooring.....12
    - Unadhered (loose-lay) or peripherally-adhered resilient sheet flooring.....15
- REMOVAL OF RESILIENTTILE
    - Supplies and tools 17
    - Removal procedure.....18
- REMOVAL OF RESIDUAL ADHESIVE
    - Supplies and tools.....22
    - Wet-scraping residual adhesive.....25
    - Complete removal of Asphaltic "cutback" Adhesive.....26
- COMPLETE REMOVAL OF WOOD UNDERLAYMENT
    - Supplies and tools.....28
    - Wood underlayment with sheet flooring.....29
    - Wood underlayment with tile flooring.....31
    - Removal of wood underlayment boards 33

NOTICE

Various Federal, State and local government agencies have regulations governing the removal of in-place asbestos-containing material. If you contemplate the removal of a resilient floor covering structure that contains (or is presumed to contain) asbestos, you must review and comply with all applicable regulations.

This booklet replaces all prior editions of the RFCI and Armstrong Recommended Work Practices Publications. Please note that these recommended work practices are subject to change as new practices are incorporated. It is your responsibility to determine that the recommended work practices you use are those in effect.

Important Information for Installers of Resilient Floor Coverings Concerning Existing Resilient Floor Covering Structures

- Vinyl asbestos tile and asphalt tile contain asbestos fibers, as did some asphaltic "cutback" adhesives and the backings of many sheet vinyl floorings and lining felts. The presence of the asbestos in these products is not readily identifiable.

- While resilient floor covering products manufactured today do not contain asbestos, the asbestos used in the older products was encapsulated in the matrix of the product. The Environmental Protection Agency (EPA) recognizes that those products are non-friable (i.e. when dry cannot be crumbled, pulverized or reduced to powder by hand pressure) unless certain activities prohibited by the removal practices in this booklet occur.

- Unless positively certain that the product you intend to remove is a non-asbestos containing material, you must presume it contains asbestos. Regulations may require that the material be tested to determine asbestos content.

- RFCI's Recommended Work Practices are a defined set of instructions addressed to the task of removing all resilient floor covering structures whether or not they contain asbestos. When RFCI's Recommended Work Practices are followed, resilient floor covering structures that contain (or are presumed to contain) asbestos can be removed in a manner that will comply with the current Occupational Exposure to Asbestos Standard's Permissible Exposure Limits (PEL) issued by the Occupational Safety and Health Administration (OSHA).

- Numerous products, devices and techniques have been recently introduced and/or recommended for the removal of resilient floor covering st ructures. Before you use any practices other than those identified in this booklet for the removal of an in-place resilient floor-covering product that contains (or is presumed to contain) asbestos, you must determine that the practice meets all applicable regulations or standards including the OSHA standards for occupational exposure to asbestos and the EPA asbestos regulations. You must also determine that any materials used during the removal practice will be compatible with the new floor covering to be installed.

Mold and Mildew

Prior to removing an existing resilient floor following the **RFCI Recommended Work Practices for Removal of Resilient Floor Coverings** (unless state or local law requires other measures) or installing a new floor, if there are visible indica tions of mold or mildew or the presence of a strong musty odor in the area where resilient flooring is to be removed or installed, the source of the problem should be identified and corrected before proceeding with the flooring work. In virtually all situations, if there is a mold issue, there is or has been an excessive moisture issue. Visible signs of mold or mildew (such as discoloration) can indicate the presence of mold or mildew on the subfloor, on the underlayment, on the back of the flooring, and sometimes even on the floor surface. If mold or mildew is discovered during the removal or installation of resilient flooring, all flooring work should stop until the mold/mildew problem (and any related moisture problem) has been addressed. Before installing the new resilient flooring, make sure the underlayment and/or subfloor is allowed to thoroughly dry and that any residual effect of excessive moisture, mold, or structural damage has been corrected.

To deal with mold and mildew issues, you should refer to the U.S. Environmental Protection Agency (EPA) guidelines that address mold and mildew. Depending on the mold or mildew condition present, those remediation options range from cleanup measures using gloves and biocide to hiring a professional mold and mildew remediation contractor to address the condition. Remediation measures may require structural repairs such as replacing the underlayment and/or subfloor contaminated with mold and mildew as a result of prolonged exposure to moisture.

The EPA mold guidelines are contained in two publications "A Brief Guide to Mold, Moisture and Your Home" (EPA 402-K-02-003) and "Mold Remediation in Schools and Commercial Buildings" (EPA 402-K-01-001). Appendix B of the "Mold Reme diation in Schools and Commercial Buildings" publication describes potential health effects from exposure to mold, such as allergic and asthma reactions and irritation to eyes, skin, nose and throat. These publications can be located on EPA's website at www.epa.gov/iaq/molds

OSHA REQUIREMENTS

A. Asbestos

In August 1994, OSHA published revised asbestos standards which affect some of the operations described in this booklet. OSHA has determined that intact resilient floor covering materials can be removed under a "negative exposure assessment" in compliance with the revised standards by appropriately trained workers using the Recommended Work Practices.

- "Intact" is defined to mean that the asbestos-containing material has not crumbled, been pulverized, or otherwise deteriorated so that it is no longer likely to be bound with its matrix. The incidental breakage of flooring materials, or slicing of sheet vinyl floor covering with a sharp-edged instrument, during removal operations conducted in accordance with the Recommended Work Practices does not mean that the materials are not removed in an "intact" condition . OSHA has recognized that resilient floor covering materials are considered nonfriable if intact and generally do not emit airborne fibers unless subjected to sanding, sawing or other aggressive operations.

- Installers of resilient floor covering materials that plan to use the Recommended Work Practices outlined in this book to remove intact and nonfriable asbestos containing flooring materials are required to complete an 8-hour training program.

- Employers must designate a "competent person" with 4 hours of additional training to be responsible for the health and safety of the workers at the floor removal job site.

- OSHA has determined that the competent person can make a "negative exposure assessment" based upon data in the OSHA asbestos rulemaking record (including data from the Environ Reports) showing that use of the Recommended Work Practices during removal of intact flooring material consistently results in worker exposures below the levels permitted in the OSHA standards.

- Where other workers or persons may have access to the flooring removal worksite, the employer must establish a demarcated "regulated area" (e.g. using barrier tape or closing room doors to enclose a work area) and post warning signs.

- Workers who engage in the removal of asbestos-containing flooring materi als for more than 30 days per year (one hour or more per day) must receive medical su rveillance .

- Employers are required to maintain certain training and workplace and medical records.

OSHA REQUIREMENTS

B. Crystalline Silica

In March 2016, OSHA published a revised rule relating to occupational exposure to respirable crystalline silica which could affect some of the operations described in this booklet. In general, the revised rule established a new permissible exposure limit (PEL) of 50 ug/m^3 for respirable silica. The rule also requires exposure assessments, the use of exposure control methods, respiratory protection, medical surveillance, hazard communication information, and recordkeeping.

More specifically, the revised standard requires employers:

- to assess employee exposures to silica if exposures may be at or above an action level of 25 ug/m^3 (micrograms per cubic meter of air) when averaged over an eight hour day;
- to protect workers from respirable crystalline silica exposures above the permissible exposure limit of 50 ug/m^3, when averaged over an eight hour day;
- to limit worker access to areas where they could be exposed to crystalline silica above the PEL;
- to use dust controls to protect workers from exposures above the PEL, and where that is not possible, to provide respirators;
- to use feasible housekeeping methods that do not create airborne dust;
- to establish and implement a written exposure control plan that identifies tasks that involve exposure and protection methods; and
- to offer medical exams every three years for workers who are exposed at or above the action level for at least 30 days per year; and to provide certain training and maintain certain records.

Most provisions of the rule took effect on January 23, 2018, except that the medical surveillance provisions will become applicable on June 23, 2020.

EPA LEAD-BASED PAINT REQUIREMENTS

Effective July 6, 2010, EPA has established training, certification, and work practice requirements for paid renovation, repair, or remodeling work that disturbs more than 6 square feet of lead-based paint per room within a 30 day period in a home (e.g. single-family, apartments) or a facility occupied by children under age of 6 (e.g., daycare center, preschool) built prior to 1978. 40 C.F.R. § 745.80 et seq. In these pre-1978 facilities, it is assumed that any painted surfaces contain lead paint, unless EPA-approved testing is performed to show that the disturbed surfaces are lead-free.

The removal or installation of resilient flooring in these pre-1978 buildings may involve disturbing or removing molding, baseboards, or floors (e.g., wood) that have been painted with lead-based paint or cutting off the bottom of painted doors or molding to allow the new floors to fit. To determine whether more than 6 square feet in a room is disturbed, multiply the total length of the disturbed painted material by its height (both numbers in feet). For example, if a 4 inch high baseboard (1/3 foot) is being removed as part of an installation or removal, over 18 linear feet of this baseboard would have to be removed to trigger the rule (1/3 foot x 18 feet= 6 square feet). For more examples, see http:// www.epa.gov/lead/pubs/ rrp-faq.pdf.

If the rule is triggered the following training, certification, and work practices are required:

- Employees performing the work must have completed a lead-safe work practices training course of 8 hours in length approved by EPA, which training is valid for 5 years.

- The firm performing the work must be lead-safe certified by EPA, which requires the submission of an application and fee to EPA. The application fee is typically $300 for a five year certification and it may take up to 90 days to process the application. The application procedures for each state can be found at the link in the paragraph above.

- Before beginning work, your firm must: (1) notify the residents of the affected homes or the parents of the affected children by providing the EPA Renovate Right pamphlet (http://www.epa.gov/lead/pubs/renovaterightbrochure.pdf); and (2) must maintain its notification records for 3 years.

- Your firm and employees must use lead-safe work practices, including posting warning signs; isolating the work area with plastic sheeting or other materials; removing or covering furniture; cleaning and inspecting the worksite when the work is finished; and disposing of any waste in a safe manner.

Some states operate their own lead-based paint programs and may have more stringent requirements than the EPA rule. See http://www.epa.gov/lead/pubs/renovation.htm#states for a list of states with their own rules.

GENERAL RULES FOR REMOVAL OF RESILIENT FLOOR COVERING

When following the Recommended Work Practices there are several general rules to follow:

Never sand, dry scrape, drill, saw, beadblast, or mechanically chip or pulverize any resilient flooring, backing, lining felt, asphaltic "cutback" adhesive, or other adhesive to remove them from the floor. See "Warning Statement" on page one.

- Unless positively certain the product you intend to remove is a non-asbestos containing material, you must presume it contains asbestos. Regulations may require that the material be tested to determine asbestos content.
- Removal of existing floor covering should be considered the last alternative.
- Use a vacuum equipped with HEPA filter, disposable dust bag, and metal floor attachment (no brush).
- All sheet floor removals must be done using detergent solution.
- All felt scraping must be done wet.
- Prior to removal, all tile must be wetted (except in cases where heat will be applied).
- Do not dry sweep.
- Material removed must be placed in heavy-duty impermeable bags at least 6 mils thick or in a leak-tight container, properly labeled and disposed of in an authorized landfill.

ALTERNATIVES TO REMOVAL OF EXISTING RESILENT FLOOR COVERINGS

Removal of the in-place resilient floor should be considered the final alternative. It is preferred you leave the existing resilient floor covering in place and go over the top (single flooring layer only) with the new floor.

Alternatives to the removal of an existing resilient floor over approved subfloors are:

- Installing directly over a single layer of approved existing resilient flooring.
- Filling the embossing of the in-place resilient flooring with embossing leveler before installation (residential use only).
- Covering existing resilient flooring on an approved suspended wood subfloor with a recommended wood underlayment.

When you plan to install a new resilient sheet or tile floor covering over an existing resilient floor covering, follow the installation instructions published by the manufacturer. Those instructions will tell you what must be done to the existing surface before the new resilient floor covering can be installed. Remove wax and other finishes by wet stripping only.

Contact a local established floorcovering dealer for additional information.

REMOVAL OF RESILIENT SHEET FLOORING

Supplies and Tools

- Safety glasses and gloves
- Stiff-bladed wall or floor scraper
- Utility or hook knife
- Tank-type High Efficiency Particulate Air (HEPA) wet/dry vacuum cleaner with disposable dust bag and metal floor attachment (no brush)
- Hand-held tank sprayer
- Large-size heavy-duty impermeable trash bags (at least 6 mils thick) or closed leak-tight containers with ties, tape, or string to tie the bags shut, and appropriate labels stating, for example "Caution- Contains Asbestos. Avoid Opening or Breaking Bag or Container. Breathing Asbestos is Hazardous to Your Health". It may also be appropriate to include in the label a warning regarding the presence of crystalline silica.
- A liquid dishwashing detergent which is stated to contain anionic, nonionic and amphoteric surfactant s. Mix this specified liquid dishwashing detergent with water to make a dilute solution (16 oz. specified liquid dishwashing detergent in one gallon of water)
- Ground fault circuit interrupter for electrical connection of the HEPA vacuum and any other electrical connections required

REMOVAL OF FULLY-ADHERED RESILIENT SHEET FLOORING

WARNING 

Do not sand, dry sweep, dry scrape, drill, saw, beadblast or mechanically chip or pulverize existing resilient flooring, backing, lining felt, asphaltic "cutback" adhesive, or other adhesive. See "Warning Statement" on page one.

- Remove all furniture and appliances from the work area.
- Remove any binding strips or other restrictive moldings from doorways, walls, etc.
- Prepare the specified liquid dishwashing detergent solution (16 oz. of specified liquid dishwashing detergent to one gallon of water) and pour into a hand sprayer.
- Before removal begins, vacuum the entire floor using a HEPA vacuum with a metal floor attachment.

WARNING 

Electrical shock hazard exists. Use a ground fault interrupter for any electrical connections of equipment used in a wet environment

- Make a series of parallel slices 4" to 8" apart through the top layer of the flooring and about halfway through the backing, parallel to the wall, for the entire floor.

WARNING 

Resilient flooring becomes slippery when wet with the specified liquid dishwashing detergent solution. Use caution to contain the solution in the immediate work area.

- Wear layer removal: One worker starts at the end of the room farthest from the entrance door and pries up the corner of the strip, separating the backing from the wear layer. As the strip is being removed, another worker sprays a constant mist of the specified liquid dishwashing detergent solution into the delamination nip point to minimize any airborne dust particles. When done properly, the felt remaining on the floor and on the back of the strip will be thoroughly wet. Do only one three strip area at a time. Stand on the remaining floor covering or clean floor (to the extent feasible, minimize standing on the felt). The sliced strips should be peeled from the backing by pulling or rolling around a core which will control the stripping angle to create a uniform tension (some resilient flooring wear layers may not be readily strippable and may require wet-scraping). Tie or tape the removed material securely and place in the heavy-duty impermeable trash bag or closed leak-tight container for disposal.

- Remove and dispose of each succeeding strip in the above manner. Minimize walking on the exposed felt to the extent feasible. Worker footwear must be cleaned or removed before leaving work area. Close full bags tightly, and seal securely for disposal. Identify with an appropriate label stating, for example "Caution-Contains Asbestos. Asbestos is Hazardous to Your Health." It may also be appropriate to include in the label a warning regarding the presence of crystalline silica. Dispose in an approved landfill only.

- Occasionally, parts of the top or inner layer will stick to the backing. This can often be eliminated by peeling in the opposite direction. The stiff-bladed scraper may aid in the removal or peeling of these layers.

- Wet-scraping residual felt :
    (1) After three strips of flooring material are removed, any residual felt must be wet scraped. Thoroughly wet the residual felt with the specified liquid dishwashing detergent solution. Wait a few minutes to allow the specified liquid dishwashing detergent solution to soak into the felt.

    (2) Stand on the remaining floor covering to the extent feasible (not the felt) and use the stiff bladed scraper to scrape up the wet felt.

    (3) Rewet the felt if the specified liquid dishwashing detergent solution has not completely penetrated, if drying occurs, or if dry felt is exposed during scraping. Pick up the scrapings while still wet as they are removed from the floor and place in a heavy-duty impermeable trash bag or leak-tight container. Wet-scrape all felt from this floor area before proceeding further.

PRECAUTION:
Excessive moisture can cause permanent damage to wood underlayments. It is the installer's responsibility to use the correct amount of specified liquid dishwashing detergent solution to prevent underlayment damage. A floor that has been wet-scraped must be allowed to dry before installing any new resilient flooring.

(4) When this floor area has been cleaned free of felt, vacuum with HEPA vacuum cleaner with the metal floor attachment. Position the vacuum cleaner so that the discharge air does not blow on the area being cleaned.

(5) Repeat the above on the next series of strips.

(6) Repeat this operation until the felt has been removed from the whole floor. Close full bags tightly and seal securely for disposal. Identify with an appropriate label stating, for example "Caution-Contains Asbestos. Avoid Opening or Breaking Bag or Container. Breathing Asbestos is Hazardous to Your Health." It may also be appropriate to include in the label a warning regarding the presence of crystalline silica. Dispose in an approved landfill only.

(7) When the entire floor has been removed, let it dry and vacuum with HEPA vacuum cleaner with the metal floor attachment. Position the vacuum cleaner so that the discharge air does not blow on the area being cleaned.

(8) After vacuuming, used HEPA filters and cleaner bags should be removed according to the manufacturer's instructions and placed in a heavy-duty impermeable trash bag or leaktight container with an appropriate label stating, for example "Caution-Contains Asbestos Avoid Opening or Breaking Bag or Container. Breathing Asbestos is Hazardous to Your Health." It may also be appropriate to include in the label a warning regarding the presence of crystalline silica. Close and seal the trash bag securely for disposal. Dispose in an approved landfill only.

(9) The floor is now ready to have a new resilient floor covering installed. Follow the manufacturer's installation instructions.

REMOVAL OF UNADHERED (LOOSE-LAY) OR PERIPHERALLY-ADHERED RESILIENT SHEET FLOORING

WARNING 

Do not sand, dry sweep, dry scrape, drill, saw, beadblast, or mechanically chip or pulverize existing resilient flooring, backing, lining felt, asphaltic "cutback" adhesive, or other adhesive. See "Warning Statement" on page one.

- Remove all furniture and appliances from the work area.
- Remove any binding strips or other restrictive moldings from doorways, walls, etc.
- Prepare the specified liquid dishwashing detergent solution (16 oz. of specified liquid dishwashing detergent to one gallon of water) and pour into a hand sprayer.
- Before removal begins, vacuum the entire floor using a HEPA vacuum with a metal floor attachment.

WARNING 

Electrical shock hazard exists. Use a ground fault interrupter for any electrical connections of equipment used in a wet environment

- If flooring is unadhered, start at the end of the room farthest from the entrance doorway and slice a strip 18" wide in the unadhered flooring. One worker removes the sliced strip while another worker sprays the specified liquid dishwashing detergent solution directly into the separation nip point. Minimize standing on the exposed subfloor during the removal process to the extent feasible.

CAUTION 

Resilient flooring becomes slippery when wet with specified liquid dishwashing detergent solution. Use caution to contain the solution in the immediate work area. Standing on a new sheet of plywood or non-slip surface while working is recommended.

- Roll the wet strip tightly and tie or tape securely so it will not unroll. Place it in a heavy-duty, impermeable trash bag or closed leak-tight container big enough to accommodate several rolls for disposal.

Use this method for nonbonded areas of peripherally-adhered floors. To remove bonded areas, follow instructions under "Removal of Fully-Adhered Resilient Sheet Flooring."

- Clean the exposed floor with a HEPA vacuum cleaner with the metal floor attachment. Position the vacuum cleaner so that the discharge air does not blow on the area being cleaned.

- Repeat the above, slicing, rolling and disposing of one strip at a time and cleaning the newly exposed area immediately until the entire floor covering has been removed. Let the floor dry, then vacuum with a HEPA vacuum cleaner using metal floor attachment.

- After vacuuming, used HEPA filters and cleaner bags should be removed according to manufacturer's instructions and placed in a heavy-duty impermeable trash bag or leak-tight container with an appropriate label stating, for example "Caution-Contains Asbestos . Avoid Opening or Breaking Container. Breathing Asbestos is Hazardous to Your Health:" It may also be appropriate to include in the label a warning regarding the presence of crystalline silica. Close and seal the trash bags or leak-tight container securely for disposal. Dispose in an approved landfill only.

- The floor is now ready for installation of new floor covering using the manufacturer's installation instructions.

REMOVAL OF RESILIENT TILE

Supplies and Tools

- Safety glasses and gloves
- Short or long-handled scraper (DO NOT USE SPUD BAR OR MECHANICAL CHIPPER)
- Hammer
- Commercial-type hand-held hot-air gun or a radiant heat source such as an infrared machine
- Large size, heavy-duty labeled, impermeable trash bags with minimum 6 mil thickness (or closed leak-tight containers), with ties, tape or string to tie shut, and tags for labeling
- Tank-type High Efficiency Particulate Air (HEPA) wet/dry vacuum cleaner with disposable dust bag and metal floor attachment (no brush)
- Hand-held tank sprayer
- Ground fault circuit interrupter for electrical connection of the HEPA vacuum and any other electrical connections required

REMOVAL PROCEDURE

WARNING

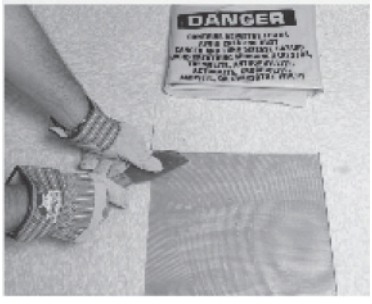
Do not sand, dry sweep, dry scrape, drill, saw, beadblast, or mechanically chip or pulverize existing resilient flooring, backing lining felt, asphaltic "cutback" adhesive, or other adhesive. See "Warning Statement" on page one.

- Remove all furniture and appliances from the work area. Remove any binding strips or other restrictive moldings from doorways, walls, etc.
- Before removal begins, vacuum the entire floor using a HEPA vacuum with a metal floor attachment.
- Floor tiles must be wetted (misted with hand sprayer) before actual removal begins (unless heat will be used to remove tile s).

WARNING

Electrical shock hazard exists. Use a ground fault interrupter for any electrical connections of equipment used in a wet environment.

- Those areas normally exposed to heavy foot traffic patterns usually have tiles adhered the tightest. In starting the tile removal process, select those areas which receive the least traffic. Try to remove individual tiles in one piece although some breakage of tiles is unavoidable.
- Start the removal by carefully wedging a short or long handled scraper in the seam of two adjoining tiles and gradually forcing the edge of one of the tiles up and away from the floor. Continue to force the balance of the tile up by working the scraper beneath the tile and exerting both a forward pressure and a twisting action on the blade to promote release of the tile from the adhesive and the floor.



- After the tiles are removed, place them, without further breakage, in a heavy-duty impermeable trash bag or closed leak-tight container which will be used for disposal. Removed tiles can be placed in empty tile cartons first and then placed in the heavy-duty impermeable trash bag. To prevent tearing of the heavy-duty impermeable trash bag, place only one full carton of removed tile in a bag.

- With the removal of the first tile, accessibility of other tiles is imp roved. Force the scraper under the exposed edge of another tile, and continue to exert a prying, twisting force to the scraper as it is moved under the tile until the tile releases from the floor. Remove and dispose of each tile in the manner described above.

- Minimize walking on the exposed adhesive to the extent feasible. Worker footwear must be cleaned or removed before leaving work area. Close full bags tightly and seal securely for disposal. Identify with an appropriate label stating, for example "Caution-Contains Asbestos. Avoid Opening or Breaking Container. Breathing Asbestos is Hazardous to Your Health." It may also be appropriate to include in the label a warning regarding the presence of crystalline silica. Dispose in an approved landfill only.

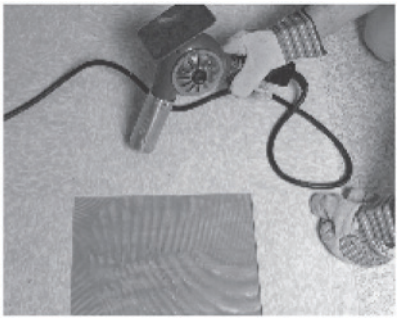
- Some tiles will release quite easily while others require varying degrees of force. Where the adhesive is spread heavily or the tile is bonded tightly, it may prove easier to force the scraper under the tightly adhered areas by striking the scraper handle with a hammer, using blows of moderate force while maintaining the scraper at a 25° to 30° angle to the floor.

CAUTION

Wear safety glasses when using this procedure.

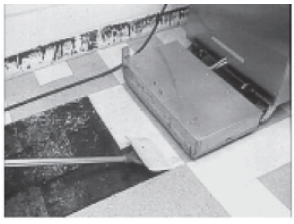
- If you encounter areas where even the above methods will not remove the tiles, the removal procedure can be simplified by thoroughly heating the tiles with a hot air gun or a radiant heat source until the heat penetrates through the tile and softens the adhesive.

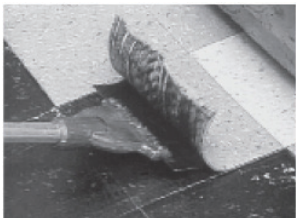
- Alternatively, without first prying up floor tiles using a scraper, a heat source like a hot air gun or infrared heat machine can be used to apply heat to the floor tiles and then the tiles may be removed by hand or by using a scraper. (Wetting the tiles is not required for this alternative removal method). When using this procedure, walking on exposed adhesive may be unavoidable. Worker footwear must be cleaned or removed before leaving the work area.



CAUTION

Handle the hot-air gun or radiant heat source carefully to avoid burn injury. Do not handle the heated tiles or adhesive without suitable glove protection. Do not use a blowtorch or open flame. Use caution not to burn or char tiles. Work area must be adequately ventilated.





- When using an infrared heat machine, follow manufacturer's instructions.

- After tiles are removed, place them in a heavy-duty impermeable trash bag or other closed leak-tight container without further breakage. Removed tiles can be placed in empty tile cartons first and then placed in the heavy duty impermeable trash bag s. To prevent tearing of the heavy-duty impermeable trash bag, place only one full carton of removed tile in a bag.

- Close the full bags of removed tile tightly and seal securely for disposal. Identify with an appropriate label stating, for example "Caution- Contains Asbestos. Avoid Opening or Breaking Container. Breathing Asbestos is Hazardous to Your Health." It may also be appropriate to include in the label a warning regarding the presence of crystalline silica. Dispose in an approved landfill only.

WARNING

Do not sand, dry sweep, dry scrape, drill, saw, beadblast, or mechanically chip or pulverize existing resilient flooring, backing, lining felt, asphaltic "cutback" adhesive, or other adhesive. See "Warning Statement" on page one.

- See Section 5, "Removal of Residual Adhesives" for proper treatment of remaining adhesive.

REMOVAL OF RESIDUAL ADHESIVE

The removal of latex based adhesives commonly used with vinyl sheet floors and some tiles can be accomplished by wetting the adhesive residue (which will soften the adhesive) and scraping. Do not use an excessive amount of water which can damage wood subfloors. The treatment of residual asphaltic "cutback" adhesive, which is covered in this section, is dependent upon the type of new resilient floor covering material to be installed and the type of subfloor. Recommendations for the treatment of residual asphaltic "cutback" adhesive are shown on pages 21 through 26.

NOTE

There are commercial adhesive removal products containing solvents that are effective in removing cutback or emulsion adhesives and comply with OSHA requirements (e.g. flashpoint greater than 140° F). These products may be used for adhesive removal; however, they may leave a solvent residue within the subfloor that can adversely affect the new adhesive or floor covering. Thus, the warranties provided by the manufacturers of new floor covering materials will not cover instances where subfloor conditions damage their products or affect their installation.

The use of asbestos encapsulants or bridging materials over asphaltic adhesive is not recommended as those products may affect the bonding properties of the new adhesive. The application of asphaltic "cutback" adhesives, if recommended by the replacement flooring manufacture, has been demonstrated to be a suitable adhesive when applied over existing cutback adhesive. The use of any new adhesive must be consistent with the installation recommendations of the replacement-flooring manufacturer.

Supplies and Tools

- Safety glasses and gloves
- Stiff-bladed wall or floor scraper
- Tank-type High Efficiency Particulate Air (HEPA) wet/dry vacuum cleaner with disposable dust bag and metal floor attachment (no brush)
- Large-size, heavy-duty, impermeable trash bags (or closed leak-tight containers) with ties, tape, or string to tie the bags shut, and tags for labeling.
- Slip-resistant shoes or rubber boots
- Ground fault circuit interrupter for electrical connection of the HEPA vacuum and any other electrical connections required
- Hand-held sprayer

- A liquid dishwashing detergent which is stated to contain anionic, nonionic and amphoteric surfactants. Mix this specified liquid dishwashing detergent with water to make a dilute solution (1 oz. of the specified liquid dishwashing detergent to one gallon of water)

- Floor machine fitted with 3M black floor pad (or equivalent)

- Removal solution-e.g. "mop on, mop off, no machine scrub," tripping solution See note on page 23 regarding use of other solutions

- Water-absorbent material

RESIDUAL ASPHALTIC "CUTBACK" ADHESIVE

CONCRETE SUBFLOOR			WOOD UNDERLAYMENT SUBFLOOR	
New Material to Be Installed	Removal of Residual Adhesive	Alternative to Removal	Removal of Residual Adhesive	Alternative to Removal
Resilient floor tile to be installed using cutback adhesive.	Residual adhesive must be wet-scraped so that no ridges or puddles are evident and what remains is a thin, smooth film. See wet-scraping of residual adhesive.	Application of a cementitious underlayment that is approved by the underlayment manufacturer for use over residual asphaltic "cutback" adhesive.[2]	The use of a cutback adhesive over wood underlayment subfloor is not recommended.	The use of a cutback adhesive over wood underlayment subfloor is not recommended
Resilient floor tile to be installed using an adhesive other than cutback adhesive.	Residual adhesive must be wet-scraped so that no ridges or puddles are evident and what remains is a thin, smooth film. See wet-scraping of residual adhesive.	Application of a cementitious underlayment that is approved by the underlayment manufacturer for use over residual asphaltic "cutback" adhesive.[2]	Complete removal of Wood Underlayment. See Complete Removal of Wood Underlayment Under Existing Tile.	Covering residual asphaltic "cutback" adhesive on an approved wood subfloor with a recommended wood underlayment.[2] When installing this new wood underlayment, felt or polyethylene sheeting may be placed over the residual adhesive to prevent a cracking or tacky sound when walking on the floor.
Any vinyl-backed sheet flooring	100% of the residual adhesive must be removed from the area to be covered. See removal of residual adhesive.	Application of a cementitious underlayment that is approved by the underlayment manufacturer for use over residual asphaltic "cutback" adhesive.[2]	Complete removal of Wood Underlayment. See Complete Removal of Wood Underlayment Under Existing Tile	Covering residual asphaltic "cutback" adhesive on an approved wood subfloor with a recommended wood underlayment.[2] When installing this new wood underlayment, felt or polyethylene sheeting may be placed over the residual adhesive to prevent a cracking or tacky sound when walking on the floor.
Felt-backed sheet flooring.	Enough of the residual adhesive must be removed so that 80% to 100% of the original substrate of the overall area is exposed.[1] See removal of residual adhesive.	Application of a cementitious underlayment that is approved by the underlayment manufacturer for use over residual asphaltic "cutback" adhesive.[2]	Complete removal of Wood Underlayment. See Complete Removal of Wood Underlayment Under Existing Tile	Covering residual asphaltic "cutback" adhesive on an approved wood subfloor with a recommended wood underlayment.[2] When installing this new wood underlayment, felt or polyethylene sheeting may be placed over the residual adhesive to prevent a cracking or tacky sound when walking on the floor.

[1] Amount of adhesive which must be removed varies. Check with manufacturer of replacement felt-backed sheet flooring for requirements.

[1]All warranties and/or guarantees concerning underlayment's performance rest with the underlayment manufacturer and not with the resilient floor covering manufacturer.

WET-SCRAPING RESIDUAL ADHESIVE

WARNING

Do not sand, dry sweep, dry scrape, drill, saw, beadblast, or mechanically chip or pulverize existing resilient flooring, backing, lining felt, asphalic "cutback" adhesive, or other adhesive. See "Warning Statement" on page one.

If new resilient floor tile is to be installed over a concrete subfloor using an asphaltic adhesive, the residual asphaltic "cutback" adhesive must be left so that no ridges or puddles are evident and what remains is a thin, smooth film. This can be accomplished by wet-scraping the residual adhesive.

Wet-Scraping residual asphaltic "cutback" adhesive:

- Moisten an area with water mixed with the specified liquid dishwashing detergent (1 oz. specified liquid dishwashing detergent to one gallon of water) to aid in wetting the adhesive. Make sure that the area stays moist. Wet-scrape with a stiff-bladed wall or floor scraper removing ridges and any loose adhesive. Make sure the adhesive is kept wet.
- Place loosened adhesive residue into a heavy-duty impermeable trash bag or leak-tight container with an appropriate label stating, for example: "Caution -Contains Asbestos. Avoid Opening or Breaking Container. Breathing Asbestos is Hazardous to Your Health." It may also be appropriate to include in the label a warning regarding the presence of crystalline silica. Close and seal the trash bag securely for disposal. Dispose in an approved landfill only.
- Wet vacuum standing water with the HEPA vacuum cleaner.
- Continue above steps until what remains of the residual asphaltic "cutback" adhesive is a thin, smooth film.
- Clean the entire floor with the HEPA vacuum cleaner using the metal floor attachment.
- After vacuuming, used HEPA filters and cleaner bags should be removed according to manufacturer's instructions and placed in a heavy-duty, imperme able trash bag or leak tight container with an appropriate label stating, for example: "Caution-Contains Asbestos. Avoid Opening or Breaking Container. Breathing Asbestos is Hazardous to Your Health." It may also be appropriate to include in the label a warning regarding the presence of crystalline silica. Close and seal the trash bags or containers securely for disposal. Dispose in an approved landfill only.

COMPLETE REMOVAL OF ASPHALTIC "CUTBACK" ADHESIVE

WARNING 

Do not sand, dry sweep, dry scrape, drill, saw, beadblast or mechanically chip or pulverize existing resilient flooring, backing, lining fell, asphaltic "cutback" adhesive, or other adhesive. See "Warning Statement" on page one.

REMOVAL METHOD

- Start in corner of the room farthest from the entrance door. Apply the removal solution (e.g. "mop on, mop off, no machine scrub," stripping solution) by using a hand sprayer or mop over an area of residual adhesive so that the adhesive in this area always remains wet during its removal. Allow the area to soak for 5-10 minutes. Remove the adhesive using a floor machine equipped with a 3M black floor pad (or equivalent), ensuring that the floor is kept wet in the area where the machine is operating.

WARNING 

Electrical shock hazard exists. Use a ground fault circuit interrupter for any electrical connections of equipment used in a wet environment.

- Occasionally push away the adhesive slurry from the subfloor with a wall or floor scraper or squeegee to check for complete removal. Continue to use the floor machine, equipped with black pad, in the same area until the concrete subfloor is cleaned to the degree necessary for the new floor installation.

- Adhesive around the edge of the room and in areas that were missed or difficult to reach with the machine can be removed with a hand-held piece of the black floor pad using the above procedures.

WARNING 

Electrical shock hazard exists. Use a ground fault interrupter for any electrical connections of equipment used in a wet environment.

- Wet HEPA vacuum the adhesive slurry. When the HEPA vacuum is full, place commercially suitable water absorbent into the HEPA container until the adhesive slurry is absorbed. An absorbent material may be used on the slurry to absorb the adhesive residue. Place the adhesive waste from the HEPA vacuum or floor into heavy-duty, impermeable bags or leak-tight containers with an appropriate label stating, for example "Caution-Contains Asbestos Avoid Creating Dust. Avoid Opening or Breaking Container. Breathing Asbestos May Cause Bodily Harm." It may also be appropriate to include in the label a warning regarding the presence of crystalline silica. Close and seal the trash bag securely for disposal. Dispose in an approved landfill only.

- Rinse floor area with clean water using a hand sprayer or mop. Worker footwear should also be cleaned and rinsed.

- Wet-vacuum standing water with HEPA vacuum cleaner.

- Continue above steps until the entire room is complete.

- Allow subfloor to dry and vacuum with a HEPA vacuum with metal floor attachment.

- Minimize walking on the wet adhesive to the extent feasible. Worker footwear must be cleaned or removed before leaving the work area.

COMPLETE REMOVAL OF WOOD UNDERLAYMENT

Supplies and Tools

- Safety glasses and gloves
- Chisel
- Hammer or mallet
- Short and long-handled pry bars
- Utility or hook knife
- Stiff-bladed wall or floor scraper
- Large-size, heavy-duty, impermeable trash bags (or leak-tight container) with ties, tape, or string to tie the bag shut and tag for labeling
- Tank-type High Efficiency Particulate Air (HEPA) wet/dry vacuum cleaner with disposable dust bags and metal floor attachment (no brush)
- Hand sprayer
- A liquid dishwashing detergent which is stated to contain anionic, nonionic and amphoteric surfactants
- 6-mil polyethylene sheeting
- Duct tape
- Ground fault circuit interrupter for electrical connection of the HEPA vacuum and any other electrical connections required
- For tile removal only-Commercial-type, handheld, hot-air gun or a radiant heat source such as infrared machine

COMPLETE REMOVAL OF WOOD UNDERLAYMENT {SUBFLOOR) UNDER EXISTING SHEET FLOORING

WARNING

Do not sand, dry sweep, dry scrape, drill, saw, beadblast, or mechanically chip or pulverize existing resilient flooring, backing, lining felt, asphaltic "cutback" adhesive, or other adhesive. See "Warning Statement" on page one.

- Remove all furniture and appliances from the work area.
- Remove any binding strips or other restrictive moldings from doorways, walls, etc.
- Prepare the specified liquid dishwashing detergent solution (16 oz. of specified liquid dishwashing detergent to one gallon of water) and pour into a hand sprayer.
- Before removal begins, vacuum the entire floor using a HEPA vacuum with a metal floor attachment

WARNING

Electrical shock hazard exists. Use a ground fault interrupter for any electrical connections of equipment used in a wet environment.

- Starting at the doorway or a floor ventilation vent, locate a joint in an underlayment board.
- Slice a strip of flooring 4 to 8 inches wide centered over the underlayment joint in the panel to be removed. Slice through the top and inner layers of flooring and about halfway through the backing. Continue this procedure for all underlayment joints over the entire floor.

CAUTION

Resilient flooring becomes slippery when wet with specified liquid dishwashing detergent solution. Use caution to contain the solution in the immediate work area.

- One worker pries up the corner of a strip, separating the backing from the wear layer. As the strip is being removed, another worker sprays a constant mist of the specified liquid dishwashing detergent solution into the delamination nip point to minimize any airborne dust particle s. When done properly, the felt remaining on the floor and on the back of the strip will be thoroughly wet. Stand on the remaining floor covering or clean floor (do not stand on the felt).

The sliced strips should be peeled from the backing by pulling or rolling around a core which will control the stripping angle to create a uniform tension (some resilient flooring wear layers may not be readily strippable and may require wet-scraping). Tie or tape the removed material securely and place in a heavy-duty, impermeable, trash bag or closed leak tight container for disposal.

- Remove and dispose of each succeeding strip in the above manner. Minimize walking on the exposed felt to the extent feasible. Worker footwear must be cleaned or removed before leaving work area. Close full bags tightly, and seal securely for disposal. Identify with an appropriate label stating, for example "Caution-Contains Asbestos Avoid Opening or Breaking Container. Breathing Asbestos is Hazardous to Your Health:" It may also be appropriate to include in the label a warning regarding the presence of crystalline silica. Dispose in an approved landfill only.

- Occasionally, parts of the top or inner layer will stick to the backing. This can often be eliminated by peeling in the opposite direction. The stiff bladed scraper may aid in the removal or peeling of these layers.

WARNING 

Do not sand, dry sweep, dry scrape, drill, saw, beadblast, or mechanically chip or pulverize existing resilient flooring, backing, lining felt, asphaltic "cutback" adhesive, or other adhesive. See "Warning Statement" on page one.

- Remove all furniture and appliances from the work area.

- Remove any binding strips or other restrictive moldings from doorways, walls, etc.

- Prepare the specified liquid dishwashing detergent solution (16 oz. of specified liquid dishwashing detergent to one gallon of water) and pour into a hand sprayer.

- Before removal begins, vacuum the entire floor using a HEPA vacuum with a metal floor attachment

- Wet-scraping residual felt-follow instructions for wet-scraping residual felt on Page 12.

- For procedures for removing wood underlayment boards see Page 32.

COMPLETE REMOVAL OF WOOD UNDERLAYMENT {SUBFLOOR) UNDER EXISTING TILE FLOORING

- Before removal begins, the entire floor is vacuumed using a HEPA vacuum with a metal floor attachment.

WARNING 

Electrical shock hazard exists. Use a ground fault interrupter for any electrical connections of equipment used in a wet environment.

- Floor tiles must be wetted (misted with hand sprayer) before actual removal begins (unless heat will be used to remove tiles).

WARNING 

Resilient flooring becomes slippery when wet with the specified liquid dishwashing detergent solution. Use caution to contain the solution in the immediate work area.

- Starting at the doorway or a floor ventilation vent, locate a joint in an underlayment board.

- Start the removal of the tile at the underlayment joint by carefully wedging the scraper in the seam of two adjoining tiles and gradually forcing the edge of one of the tiles up and away from the floor. Do not intentionally break off pieces of the tile, but continue to force the balance of the tile up by working the scraper beneath the tile and exerting both a forward pressure and a twisting action of the blade to promote release of the tile from the adhesive and the floor. Continue to remove tiles in this manner at all underlayment joints until all board joints are exposed.

- After the tiles are removed place them, without further breakage into smaller pieces, in a heavy-duty impermeable trash bag or closed leak-tight container which will be used for disposal. Removed tiles can be placed in empty tile cartons first and then placed in heavy-duty, impermeable, trash bags. To prevent tearing of the heavy-duty, impermeable, trash bag, place only one full carton of removed tile in a bag.

- With the removal of the first tile, accessibility of the other tiles is improved. Force the scraper under the exposed edge of another tile, and continue to exert a prying, twisting force to the scraper as it is moved under the tile until the tile releases from the underlayment. Remove and dispose of each tile in the manner above. Minimize walking on the exposed adhesive to the extent feasible. Worker footwear must be cleaned or removed before leaving area. Close full bags or leak-tight container tightly and seal securely for disposal. Identify with an appropriate label stating, for example "Caution-Contains Asbestos. Avoid Opening or Breaking Container. Breathing Asbestos is Hazardous to Your Health." It may also be appropriate to

include in the label a warning regarding the presence of crystalline silica. Dispose in an approved landfill only.

- Some tiles will release quite easily while others require varying degrees of force. Where the adhesive is spread heavily or the tile is bonded tightly, it may prove easier to force the scraper through the tightly adhered areas by striking the scraper handle with a hammer, using blows of moderate force while maintaining the scraper at a 25° to 30° angle to the floor.

- If you encounter areas where even the above methods will not remove the tiles, the removal procedure can be simplified by thoroughly heating the tiles with a hot-air gun or a radiant heat source until the heat penetrates through the tile and softens the adhesive.

- When using automated infrared heating machines, follow the manufacturer's instructions.

WARNING 

Handle the hot-air gun or radiant heat source carefully to avoid burn injury. Do not handle the heated tiles or adhesive without suitable glove protection. Do not use a blowtorch or open flame. Use caution not to burn or char tiles. Work area must be adequately ventilated.

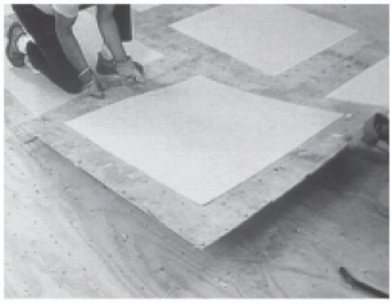
REMOVAL OF WOOD UNDERLAYMENT BOARDS

WARNING

Do not sand, dry sweep, dry scrape, drill, saw, beadblast or mechanically chip or pulverize existing resilient flooring, backing, lining felt, asphaltic "cutback" adhesive, or other adhesive. See "Warning Statement" on page one.

- After all felt from sheet flooring has been wetscraped or tiles removed from the underlayment joints, drive a chisel, using a hammer or mallet, between the underlayment board and the subfloor. Use the chisel to pry up the underlayment enough to insert a pry bar and remove the chisel. Slowly and carefully use pry bars to pry up the underlayment board a little at a time until the board is completely loose and can be removed.

- Caution must be used to avoid breaking the underlayment board. The underlay ment board should be removed in one piece. If the underlayment board breaks, slice through the sheet resilient flooring at the break and spray any exposed felt with the specified liquid dishwashing detergent solution. Allow the specified liquid dishwashing detergent solution to penetrate for a few minutes, then continue lifting the broken underlayment. In the case of a broken underlayment board with tile adhered, wet (mist) the broken tile and carefully remove any loose pieces.



- Wear heavy gloves and be careful of wood splinters and fasteners sticking out of the back of the underlayment. Each underlayment board (or piece of board) should be removed from the work area as soon as it has been pried up to avoid injuries (such as stepping on a nail). Fasteners protruding from removed board should be flattened with a hammer. Place removed underlayment boards on skids with the nails pointing downward. Wrap skid with 6-mil polyethylene plastic sheeting and secure with duct tape. Identify with an appropriate label stating, for example "Caution-Contains Asbestos. Avoid Opening or Breaking Container. Breathing Asbestos is Hazardous to Your Health." It may also be appropriate to include in the label a warning regarding the presence of crystalline silica. Dispose in an approved landfill only.

- If the underlayment panel extends under cabinets or wall partitions, it will be necessary to slice through the flooring with a knife as close to the vertical surface as possible. Deeply score the panel. This should allow for removal.

- After each panel has been removed, pull out any nails or fasteners still in the subfloor.

- A chisel is not needed to start the removal of boards after the first board has been removed. Simply work the pry bar under the exposed edge of the next board.

- When removal of the underlayment under the existing floor is complete, thoroughly check the exposed subfloor. Rena ii loose areas and reset any "popped" nails or fasteners.

- Vacuum up any residue using the HEPA vacuum cleaner with the metal floor attachment.

- After vacuuming, used HEPA filters and cleaner bags should be removed according to the manufacturer's instructions and placed in a heavy-duty, impermeable, trash bag or leak-tight container with an appropriate label stating, for example "Caution-Contains Asbestos. Avoid Opening or Breaking Container. Breathing Asbestos is Hazardous to Your Health." It may also be appropriate to include in the label a warning regarding the presence of crystalline silica. Close and seal the trash bag or container securely for disposal. Dispose in an approved landfill only.

- Prepare the subfloor by installing new underlayment and or floor covering according to the manufacturer's installation instructions.

115 Broad Street, Suite 201
LaGrange, GA 30240
706.882.3833

January 2018

This book replaces all prior editions of the RFCI and Armstrong Recommended Work Practices publications . Future editions of these work practices may be issued to replace this publication .

RFCi
Resilient Floor Covering Institute