

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

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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;

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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.

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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.

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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.

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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.

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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.

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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.

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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:



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- (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 (ASHERA) 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).

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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 following:

- (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  $\frac{1}{10}$  of the surface if the damage is distributed, or more than  $\frac{1}{4}$  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;

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- (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.

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(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;

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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 photograph 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;

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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.



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- (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.

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(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.

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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.

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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.

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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.

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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; diagramming 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.

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(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.

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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.



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- (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 Asbestos 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;

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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.

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(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.

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(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).

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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.

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- (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 contrast 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 item 14.
- (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.

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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.

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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;



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- 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).

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(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.

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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.

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(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.

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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.

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- 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.

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(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.

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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 immovable 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.



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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.

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(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.

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(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.

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(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.

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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](http://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.

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(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.



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- (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 Agency Requirements*;
- 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.

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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.

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- 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

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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.

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(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.

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- (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).

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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

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- 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:



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- 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;

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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);

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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

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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.

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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.

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(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*

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- 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.

454 CMR: DEPARTMENT OF LABOR STANDARDS

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.