DEPARTMENT OF PROFESSIONAL AND OCCUPATIONAL REGULATION
PERIMETER CENTER
9960 MAYLAND DRIVE
RICHMOND, VIRGINIA 23233

ASBETSOS REGULATORY REVIEW COMMITTEE OF THE VIRGINIA BOARD FOR ASBESTOS, LEAD, AND HOME INSPECTORS

Tentative **AGENDA**

MONDAY, FEBRUARY 6, 2023, 10:00 A.M.
2nd FLOOR, BOARD ROOM 3

I. CALL TO ORDER

II. EMERGENCY EVACUATION PROCEDURES

III. APPROVAL OF AGENDA

a. Committee Agenda, February 6, 2023

IV. PUBLIC COMMENT PERIOD*

V. OVERVIEW

a. Review Purpose of Committee
b. Members & Staff
c. Primary Responsibilities of the Committee
    i. Overview of Regulatory Review Process
d. Proposed Regulatory Review Timeline

VI. RESOURCES AND INFORMATION

a. Chapter 5 of Title 54.1 of the Code of Virginia
b. Virginia Asbestos Licensing Regulations
c. Federal Laws/Regulations
    i. 15 USC 2646 (Contractor and laboratory accreditation)
    ii. 40 CFR Part 61 Subpart M (National Emission Standard for Asbestos)
    iii. 40 CFR Part 763 (Asbestos)
    iv. Appendix C to Subpart E of Part 763, Title 40 (Asbestos Model Accreditation Plan)
e. Regulatory Review Topics
f. Regulatory Review Matrix
g. Federal/State Law-Regulation Cross Reference

VII. NEW BUSINESS

a. Consider Necessary Regulatory Changes

* Five minute public comment, per person, with the exception of any open disciplinary or application files.

Persons desiring to participate in the meeting and requiring special accommodations or interpretative services should contact the Department at (804) 367-0362 at least ten days prior to the meeting so that suitable arrangements can be made for an appropriate accommodation. The Department fully complies with the Americans with Disabilities Act.

VIII. OTHER BUSINESS

a. Discuss Topics for Next Meeting
b. Set Next Meeting Date(s)

IX. COMPLETE CONFLICT OF INTEREST FORMS AND TRAVEL VOUCHERS

X. ADJOURN

***** Five minute public comment, per person, with the exception of any open disciplinary or application files.

Persons desiring to participate in the meeting and requiring special accommodations or interpretative services should contact the Department at (804) 367-0362 at least ten days prior to the meeting so that suitable arrangements can be made for an appropriate accommodation. The Department fully complies with the Americans with Disabilities Act.

PERIMETER CENTER CONFERENCE CENTER
EMERGENCY EVACUATION OF BOARD AND TRAINING ROOMS
(Script to be read at the beginning of each meeting.)

PLEASE LISTEN TO THE FOLLOWING INSTRUCTIONS ABOUT EXITING THE PREMISES IN THE EVENT OF AN EMERGENCY.

In the event of a fire or other emergency requiring the evacuation of the building, alarms will sound. When the alarms sound, leave the room immediately. Follow any instructions given by Security staff

Board Room 1
Exit the room using one of the doors at the back of the room. Upon exiting the room, turn **RIGHT.** Follow the corridor to the emergency exit at the end of the hall.

Upon exiting the building, proceed straight ahead through the parking lot to the fence at the end of the lot. Wait there for further instructions.

Board Room 2
Exit the room using one of the doors at the back of the room. (Point) Upon exiting the room, turn **RIGHT.** Follow the corridor to the emergency exit at the end of the hall.

Upon exiting the building, proceed straight ahead through the parking lot to the fence at the end of the lot. Wait there for further instructions.

You may also exit the room using the side door, turn **Right** out the door and make an immediate **Left**. Follow the corridor to the emergency exit at the end of the hall.

Upon exiting the building, proceed straight ahead through the parking lot to the fence at the end of the lot. Wait there for further instructions.

Board Rooms 3 and 4
Exit the room using one of the doors at the back of the room. Upon exiting the room, turn **RIGHT.** Follow the corridor to the emergency exit at the end of the hall.

Upon exiting the building, proceed straight ahead through the parking lot to the fence at the end of the lot. Wait there for further instructions.

Training Room 1
Exit the room using one of the doors at the back of the room. Upon exiting the room, turn **LEFT.** Follow the corridor to the emergency exit at the end of the hall.

Upon exiting the building, proceed straight ahead through the parking lot to the fence at the end of the lot. Wait there for further instructions.

Training Room 2
Exit the room using one of the doors at the back of the room. Upon exiting the doors, turn **LEFT.** Follow the corridor to the emergency exit at the end of the hall.

Upon exiting the building, proceed straight ahead through the parking lot to the fence at the end of the lot. Wait there for further instructions.

PUBLIC COMMENT PERIOD

Five minute public comment, per person, with the exception of any open disciplinary or application files.

OVERVIEW

a. Review Purpose of Committee
b. Members & Staff
c. Primary Responsibility of the Committee
    i. Overview of Regulatory Process
d. Proposed Regulatory Review Timeline

1/23/2023

Code of Virginia
Title 54.1. Professions and Occupations
Subtitle II. Professions and Occupations Regulated by the Department of Professional and Occupational Regulation and Boards within the Department

Chapter 5. Asbestos, Lead, and Home Inspection Contractors and Workers

Article 1. General Provisions

§ 54.1-500. Definitions

As used in this chapter, unless the context requires a different meaning:

"Accredited asbestos training program" means a training program that has been approved by the Board to provide training for individuals to engage in asbestos abatement, conduct asbestos inspections, prepare management plans, prepare project designs or act as project monitors.

"Accredited lead training program" means a training program that has been approved by the Board to provide training for individuals to engage in lead-based paint activities.

"Accredited renovation training program" means a training program that has been approved by the Board to provide training for individuals to engage in renovation or dust clearance sampling.

"Asbestos" means the asbestiform varieties of actinolite, amosite, anthophyllite, chrysotile, crocidolite, and tremolite.

"Asbestos analytical laboratory license" means an authorization issued by the Board to perform phase contrast, polarized light, or transmission electron microscopy on material known or suspected to contain asbestos.

"Asbestos contractor's license" means an authorization issued by the Board permitting a person to enter into contracts to perform an asbestos abatement project.

"Asbestos-containing materials" or "ACM" means any material or product which contains more than 1.0 percent asbestos or such other percentage as established by EPA final rule.

"Asbestos inspector's license" means an authorization issued by the Board permitting a person to perform on-site investigations to identify, classify, record, sample, test and prioritize by exposure potential asbestos-containing materials.

"Asbestos management plan" means a program designed to control or abate any potential risk to human health from asbestos.

"Asbestos management planner's license" means an authorization issued by the Board permitting a person to develop or alter an asbestos management plan.

"Asbestos project" or "asbestos abatement project" means an activity involving job set-up for containment, removal, encapsulation, enclosure, encasement, renovation, repair, construction or alteration of an asbestos-containing material. An asbestos project or asbestos abatement project shall not include nonfriable asbestos-containing roofing, flooring and siding materials which when installed, encapsulated or removed do not become friable.

"Asbestos project designer's license" means an authorization issued by the Board permitting a person to design an asbestos abatement project.

"Asbestos project monitor's license" means an authorization issued by the Board permitting a person to monitor an asbestos project, subject to Department regulations.

"Asbestos supervisor" means any person so designated by an asbestos contractor who provides on-site supervision and direction to the workers engaged in asbestos projects.

"Asbestos worker's license" means an authorization issued by the Board permitting an individual to work on an asbestos project.

"Board" means the Virginia Board for Asbestos, Lead, and Home Inspectors.

"Dust clearance sampling" means an on-site collection of dust or other debris that is present after the completion of a renovation to determine the presence of lead-based paint hazards and the provisions of a report explaining the results.

"Dust sampling technician" means an individual licensed by the Board to perform dust clearance sampling.

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

"Home inspection" means any inspection of a residential building for compensation conducted by a licensed home inspector. A home inspection shall include a written evaluation of the readily accessible components of a residential building, including heating, cooling, plumbing, and electrical systems; structural components; foundation; roof; masonry structure; exterior and interior components; and other related residential housing components. A home inspection may be limited in scope as provided in a home inspection contract, provided that such contract is not inconsistent with the provisions of this chapter or the regulations of the Board. For purposes of this chapter, residential building energy analysis alone, as defined in § 54.1-1144, shall not be considered a home inspection.

"Home inspector" means a person who meets the criteria of education, experience, and testing required by this chapter and regulations of the Board and who has been licensed by the Board to perform home inspections.

"Lead abatement" means any measure or set of measures designed to permanently eliminate lead-based paint hazards, including lead-contaminated dust or soil.

"Lead-based paint" means paint or other surface coatings that contain lead equal to or in excess of 1.0 milligrams per square centimeter or more than 0.5 percent by weight.

"Lead-based paint activity" means lead inspection, lead risk assessment, lead project design and abatement of lead-based paint and lead-based paint hazards, including lead-contaminated dust and lead-contaminated soil.

"Lead-contaminated dust" means surface dust that contains an area or mass concentration of lead at or in excess of levels identified by the Environmental Protection Agency pursuant to § 403 of TSCA (15 U.S.C. § 2683).

"Lead-contaminated soil" means bare soil that contains lead at or in excess of levels identified by the Environmental Protection Agency.

"Lead contractor" means a person who has met the Board's requirements and has been issued a license by the Board to enter into contracts to perform lead abatements.

"Lead inspection" means a surface-by-surface investigation to determine the presence of lead-based paint and the provisions of a report explaining the results of the investigation.

"Lead inspector" means an individual who has been licensed by the Board to conduct lead inspections and abatement clearance testing.

"Lead project design" means any descriptive form written as instructions or drafted as a plan describing the construction or setting up of a lead abatement project area and the work practices to be utilized during the lead abatement project.

"Lead project designer" means an individual who has been licensed by the Board to prepare lead project designs.

"Lead risk assessment" means (i) an on-site investigation to determine the existence, nature, severity and location of lead-based paint hazards and (ii) the provision of a report by the individual or the firm conducting the risk assessment,

explaining the results of the investigation and options for reducing lead-based paint hazards.

"Lead risk assessor" means an individual who has been licensed by the Board to conduct lead inspections, lead risk assessments and abatement clearance testing.

"Lead supervisor" means an individual who has been licensed by the Board to supervise lead abatements.

"Lead worker" or "lead abatement worker" means an individual who has been licensed by the Board to perform lead abatement.

"Person" means a corporation, partnership, sole proprietorship, firm, enterprise, franchise, association or any other individual or entity.

"Principal instructor" means the individual who has the primary responsibility for organizing and teaching an accredited asbestos training program, an accredited lead training program, an accredited renovation training program, or any combination thereof.

"Renovation" means the modification of any existing structure or portion thereof, for compensation, that results in the disturbance of painted surfaces, unless that activity is (i) performed as a part of a lead abatement or (ii) limited in scope to the site work or remediation as referenced in the definition of contractor in § 54.1-1100. As used in this definition, "compensation" shall include the receipt of (a) pay for work performed, such as that paid to contractors and subcontractors; (b) wages, including but not limited to those paid to employees of contractors, building owners, property management companies, child-occupied facilities operators, state and local government agencies, and nonprofit organizations; and (c) rent for housing constructed before January 1, 1978, or child-occupied facilities in public or commercial building space.

"Renovation contractor" means a person who has met the Board's requirements and has been issued a license by the Board to conduct renovations.

"Renovator" means an individual who has been issued a license by the Board to perform renovations or to direct others who perform renovations.

"Residential building" means, for the purposes of home inspection, a structure consisting of one to four dwelling units used or occupied, or intended to be used or occupied, for residential purposes.

"Training manager" means the individual responsible for administering a training program and monitoring the performance of instructors for an accredited asbestos training, accredited lead training program or accredited renovation training program.

1987, c. 579, § 54-145.4; 1988, cc. 765, 802; 1989, c. 397; 1990, cc. 49, 73, 823; 1992, c. 152; 1993, cc. 499, 660; 1994, cc. 185, 911; 1996, cc. 76, 176, 180, 846; 1997, c. 885; 1998, c. 739; 2001, c. 723; 2009, cc. 358, 819; 2012, cc. 803, 835; 2016, cc. 161, 436, 527.

§ 54.1-500.1. Virginia Board for Asbestos, Lead, and Home Inspectors; membership; meetings; offices; quorum

The Virginia Board for Asbestos, Lead, and Home Inspectors shall be appointed by the Governor and composed of 13 members as follows: (i) one shall be a representative of a Virginia-licensed asbestos contractor, (ii) one shall be a representative of a Virginia-licensed lead contractor, (iii) one shall be a representative of a Virginia-licensed renovation contractor, (iv) one shall be either a Virginia-licensed asbestos inspector or project monitor, (v) one shall be a Virginia-licensed lead risk assessor, (vi) one shall be a representative of a Virginia-licensed asbestos analytical laboratory, (vii) one shall be a representative of an asbestos, lead, or renovation training program, (viii) one shall be a member of the Board for Contractors, (ix) three shall be Virginia-licensed home inspectors, and (x) two shall be citizen members. After the initial staggering of terms, the terms of members of the Board shall be four years, except that vacancies may be filled for the remainder of the unexpired term. The home inspector and renovation contractor members appointed to the Board shall have practiced as a home inspector and a renovation contractor, respectively, for at least five consecutive years immediately prior to appointment.

The Board shall meet at least once each year and other such times as it deems necessary. The Board shall elect from its membership a chairman and a vice-chairman to serve for a period of one year. The Board is vested with the powers and duties necessary to execute the purposes of this chapter.

1993, c. 660; 1994, cc. 185, 911; 1996, cc. 180, 846; 1997, c. 885; 2001, c. 723; 2009, cc. 358, 819; 2012, cc. 522, 803, 835; 2016, cc. 161, 436; 2022, cc. 576, 577.

§ 54.1-501. Powers and duties of the Board

The Board shall administer and enforce this chapter. The Board shall:

1. Promulgate regulations necessary to carry out the requirements of this chapter in accordance with the provisions of the Administrative Process Act (§ 2.2-4000 et seq.) to include but not be limited to the prescription of fees, procedures, and qualifications for the issuance and renewal of asbestos, lead, and renovation licenses, and governing conflicts of interest among various categories of asbestos, lead, and renovation licenses;

2. Approve the criteria for accredited asbestos training programs, accredited lead training programs, accredited renovation training programs, training managers, and principal instructors;

3. Approve accredited asbestos training programs, accredited lead training programs, accredited renovation training programs, examinations and the grading system for testing applicants for asbestos, lead, and renovation licensure;

4. Promulgate regulations governing the licensing of and establishing performance criteria applicable to asbestos analytical laboratories;

5. Promulgate regulations governing the functions and duties of project monitors on asbestos projects, circumstances in which project monitors shall be required for asbestos projects, and training requirements for project monitors;

6. Promulgate, in accordance with the Administrative Process Act, regulations necessary to establish procedures and requirements for the: (i) approval of accredited lead training programs, (ii) licensure of individuals and firms to engage in lead-based paint activities, and (iii) establishment of standards for performing lead-based paint activities consistent with the Residential Lead-based Paint Hazard Reduction Act and United States Environmental Protection Agency regulations. If the United States Environmental Protection Agency (EPA) has adopted, prior to the promulgation of any related regulations by the Board, any final regulations relating to lead-based paint activities, then the related regulations of the Board shall not be more stringent than the EPA regulations in effect as of the date of such promulgation. In addition, if the EPA shall have outstanding any proposed regulations relating to lead-based paint activities (other than as amendments to existing EPA regulations), as of the date of promulgation of any related regulations by the Board, then the related regulations of the Board shall not be more stringent than the proposed EPA regulations. In the event that the EPA shall adopt any final regulations subsequent to the promulgation by the Board of related regulations, then the Board shall, as soon as practicable, amend its existing regulations so as to be not more stringent than such EPA regulations;

7. Promulgate regulations for the licensing of home inspectors not inconsistent with this chapter regarding the professional qualifications of home inspectors applicants, the requirements necessary for passing home inspectors examinations, the proper conduct of its examinations, the proper conduct of the home inspectors licensed by the Board, and the proper discharge of its duties; and

8. Promulgate, in accordance with the Administrative Process Act, regulations necessary to establish procedures and requirements for the (i) approval of accredited renovation training programs, (ii) licensure of individuals and firms to engage in renovation, and (iii) establishment of standards for performing renovation consistent with the Residential Lead-based Paint Hazard Reduction Act and United States Environmental Protection Agency (EPA) regulations. Such regulations of the Board shall be consistent with the EPA Lead Renovation, Repair, and Painting Program final rule.

1987, c. 579, § 54-145.5; 1988, c. 765; 1989, c. 397; 1990, cc. 49, 73, 823; 1991, c. 45; 1992, c. 477; 1993, cc. 499, 660; 1994, cc. 185, 911; 1995, cc. 543, 585; 1996, cc. 180, 846; 1997, cc. 649, 885; 1998, c. 739; 2001, c. 723; 2009, cc. 358, 819; 2012, cc. 803, 835; 2016, cc. 161, 436.

§ 54.1-501.1. Applicability

The provisions of this chapter shall not apply to any employer, or any employees of such employer, regulated by the federal Occupational Safety and Health Act, and under the enforcement authority of the Occupational Safety and Health Administration.

1992, c. 52.

§ 54.1-502. Interdepartmental implementation plan

The Board, in conjunction with the Departments of General Services, Health, Labor and Industry, Education, and Environmental Quality, shall develop a plan for the implementation of this chapter which specifies the duties of each agency.

1987, c. 579, § 54-145.6; 1988, cc. 765, 802; 1989, c. 397; 1990, cc. 73, 823; 1993, c. 660.

§ 54.1-503. Licenses required

A. It shall be unlawful for any person who does not have an asbestos contractor's license to contract with another person, for compensation, to carry out an asbestos project or to perform any work on an asbestos project. It shall be unlawful for any person who does not have an asbestos project designer's license to develop an asbestos project design. It shall be unlawful for any person who does not have an asbestos inspector's license to conduct an asbestos inspection. It shall be unlawful for any person who does not have an asbestos management planner's license to develop an asbestos management plan. It shall be unlawful for any person who does not have a license as an asbestos project monitor to act as project monitor on an asbestos project.

B. It shall be unlawful for any person who does not possess a valid asbestos analytical laboratory license issued by the Board to communicate the findings of an analysis, verbally or in writing, for a fee, performed on material known or suspected to contain asbestos for the purpose of determining the presence or absence of asbestos.

C. It shall be unlawful for any person who does not possess a license as a lead contractor to contract with another person to perform lead abatement activities or to perform any lead abatement activity or work on a lead abatement project. It shall be unlawful for any person who does not possess a lead supervisor's license to act as a lead supervisor on a lead abatement project. It shall be unlawful for any person who does not possess a lead worker's license to act as a lead worker on a lead abatement project. It shall be unlawful for any person who does not possess a lead project designer's license to develop a lead project design. It shall be unlawful for any person who does not possess a lead inspector's license to conduct a lead inspection. It shall be unlawful for any person who does not possess a lead risk assessor's license to conduct a lead risk assessment. It shall be unlawful for any person who does not possess a lead inspector's or lead risk assessor's license to conduct lead abatement clearance testing.

D. It shall be unlawful for any person who does not possess a license as a renovation contractor to perform renovation. It shall be unlawful for any person who does not possess a renovator's license to perform or direct others to perform renovation. It shall be unlawful for any person who does not possess a dust sampling technician's license to perform dust clearance sampling.

E. It shall be unlawful for any individual who does not possess a license as a home inspector issued by the Board to perform a home inspection for compensation on a residential building. It shall be unlawful for any individual who does not possess a home inspector license with the new residential structure endorsement to conduct a home inspection for compensation on any new residential structure. For purposes of this chapter, "new residential structure" means a residential structure for which the first conveyance of record title to a purchaser has not occurred, or of which a purchaser has not taken possession, whichever occurs later.

1987, c. 579, § 54-145.7; 1988, cc. 765, 802; 1989, c. 397; 1990, c. 73; 1993, c. 660; 1994, cc. 185, 911; 1995, cc. 543, 585; 1996, cc. 180, 846; 1997, cc. 560, 885; 1998, c. 739; 2004, c. 133; 2009, c. 819; 2015, c. 411; 2016, cc. 161, 436.

§ 54.1-504. Asbestos supervisor's or worker's license required; exception

After July 1, 1988, it shall be unlawful for an individual who does not have an asbestos supervisor's license or worker's license to work on an asbestos project. No asbestos supervisor's license or worker's license shall be required for a supervisor or worker in the installation, maintenance, repair or removal of asbestos-containing roofing, flooring or siding

material, provided that such supervisor or worker shall satisfy any training requirements promulgated by the Board pursuant to § 54.1-501.

1987, c. 579, § 54-145.8; 1988, c. 765; 1989, c. 397; 1993, c. 660.

§ 54.1-504.1. Notices for handling asbestos

The Department of Professional and Occupational Regulation shall include with every asbestos worker's license a notice, in English and Spanish, containing a summary of the basic worker safety procedures regarding the handling of asbestos and information on how to file a complaint with the Virginia Board for Asbestos, Lead, and Home Inspectors.

2016, c. 252.

§ 54.1-505. Qualification for an asbestos contractor's license

To qualify for an asbestos contractor's license, an applicant shall:

1. Except as provided in § 54.1-504, ensure that each of his employees or agents who will come into contact with asbestos or who will be responsible for an asbestos project is licensed as an asbestos supervisor or worker; and

2. Demonstrate to the satisfaction of the Board that the applicant and his employees or agents are familiar with and are capable of complying fully with all applicable requirements, procedures and standards of the United States Environmental Protection Agency, the United States Occupational Safety and Health Administration, the Department of Labor and Industry, and the State Air Pollution Control Board covering any part of an asbestos project.

1987, c. 579, § 54-145.9; 1988, cc. 765, 802; 1989, c. 397; 1993, c. 660; 1996, cc. 180, 846.

§ 54.1-506. Repealed

Repealed by Acts 1993, c. 660.

§ 54.1-507. Repealed

Repealed by Acts 1992, c. 477.

§§ 54.1-508, 54.1-509. Repealed

Repealed by Acts 1993, c. 660.

§ 54.1-510. Repealed

Repealed by Acts 1988, c. 802.

§ 54.1-511. Repealed

Repealed by Acts 1993, c. 660.

§ 54.1-512. Exemptions from licensure

A. In an emergency, the Board may, at its discretion, waive the requirement for asbestos contractor's, supervisor's and worker's licenses.

B. Any employer, and any employee of such employer, who conducts an asbestos project on premises owned or leased by such employer shall be exempt from licensure.

C. Notwithstanding the provisions of the Virginia Tort Claims Act (§ 8.01-195.1 et seq.), neither the Commonwealth nor any agency or employee of the Commonwealth shall be subject to any liability as the result of a determination made by the Board hereunder.

D. Nothing in this chapter shall be construed as requiring the licensure of a contractor who contracts to undertake a project, a portion of which constitutes an asbestos or lead abatement project or renovation, if all of the asbestos or lead abatement work or renovation is subcontracted to a person licensed to perform such work in accordance with the provisions of this chapter.

E. This chapter shall not apply to any person who performs lead-based paint activities within residences which they own, unless the residence is occupied by a person or persons other than the owner or the owner's immediate family while these activities are being conducted or a child is residing in the property and has been identified as having an elevated blood-lead level.

F. This chapter shall not apply to renovations of owner-occupied housing constructed before 1978, provided the person performing renovations obtains a statement signed by the owner providing that (i) no child under the age of six or pregnant woman resides in the structure, (ii) the residence is not a child-occupied facility, and (iii) the owner acknowledges that renovations may not include all of the lead-safe work practices contained in the EPA Lead Renovation, Repair, and Painting Program final rule.

G. This chapter shall not apply to any person who performs renovations on (i) housing constructed after January 1, 1978, (ii) housing for the elderly or persons with disabilities, unless a child under the age of six resides or is expected to reside in the structure, or (iii) a structure that does not have bedrooms.

1987, c. 579, § 54-145.10:6; 1988, cc. 765, 807; 1989, c. 397; 1993, c. 660; 1996, cc. 180, 846; 1998, c. 739; 2009, c. 819.

§ 54.1-513. Repealed

Repealed by Acts 1998, c. 739.

§ 54.1-514. Award of contracts by state agencies and political subdivisions

A state agency or a political subdivision shall not award a contract in connection with an asbestos project to a person who does not hold an asbestos contractor's, inspector's, management planner's or project designer's license at the time the bid is submitted unless the general contractor to whom the contract is awarded will be contractually committed to have all asbestos related work performed by its own subcontractors who are appropriately licensed as asbestos contractors, inspectors, management planners or project designers pursuant to this chapter.

1987, c. 579, § 54-145.10:8; 1988, cc. 765, 802; 1989, c. 397; 1990, c. 105; 1996, cc. 180, 846.

§ 54.1-515. Employer discrimination; penalty

Any employer who discriminates against or otherwise penalizes an employee who complains to or cooperates with the Board or any other governmental agency in administering this chapter is subject to the penalties in § 54.1-517.

1987, c. 579, § 54-145.10:9; 1988, c. 765; 1993, cc. 499, 660.

§ 54.1-516. Disciplinary actions

A. The Board may reprimand, fine, suspend or revoke (i) the license of a lead contractor, lead inspector, lead risk assessor, lead project designer, lead supervisor, lead worker, asbestos contractor, asbestos supervisor, asbestos inspector, asbestos analytical laboratory, asbestos management planner, asbestos project designer, asbestos project monitor, asbestos worker, renovator, dust sampling technician, renovation contractor, or home inspector or (ii) the approval of an accredited asbestos training program, accredited lead training program, accredited renovation training program, training manager or principal instructor, if the licensee or approved person or program:

1. Fraudulently or deceptively obtains or attempts to obtain a license or approval;

2. Fails at any time to meet the qualifications for a license or approval or to comply with the requirements of this chapter or any regulation adopted by the Board; or

3. Fails to meet any applicable federal or state standard when performing an asbestos project or service, performing lead-based paint activities, or performing renovations.

B. The Board may reprimand, fine, suspend or revoke the license of (i) any asbestos contractor who employs or permits an individual without an asbestos supervisor's or worker's license to work on an asbestos project, (ii) any lead contractor who employs or permits an individual without a lead supervisor's or lead worker's license to work on a lead abatement project, or (iii) any renovation contractor who employs or permits an individual without a renovator's license to perform or to direct others who perform renovations.

C. The Board may reprimand, fine, suspend or revoke the license of a home inspector.

1987, c. 579, § 54-145.10:10; 1988, cc. 765, 802; 1989, c. 397; 1990, c. 823; 1993, c. 660; 1994, cc. 185, 911; 1996, cc. 180, 846; 1997, c. 885; 1998, c. 739; 2001, c. 723; 2009, cc. 358, 819; 2012, cc. 803, 835; 2016, cc. 161, 436.

§ 54.1-516.1. Summary suspension of licenses or approvals; allegations to be in writing

The Board may suspend the license or the approval of any (i) accredited training program, (ii) training manager or (iii) principal instructor of any person holding a license issued by it without a hearing simultaneously with the institution of proceedings for a hearing or an informal fact finding conference, if the relevant board finds that there is a substantial danger to the public health or safety that warrants this action. The Board may meet by telephone conference call when summarily suspending a license or the approval of an accredited training program, training manager or principal instructor if a good faith effort to assemble a quorum of the Board has failed and, in the judgment of a majority of the members of the Board, the continued practice by the licensee or approved individual or training program constitutes a substantial danger to the public health or safety. Institution of proceedings for a hearing or an informal fact finding conference shall be provided simultaneously with the summary suspension. Such hearing or conference shall be scheduled within a reasonable time of the date of the summary suspension. Allegations of violations of this section shall be made in accordance with § 54.1-307.1.

2004, c. 222.

§ 54.1-517. Penalties for willful violations

Notwithstanding any other provision of law, any person who willfully violates any provision of this chapter or any regulation related to licensure or training adopted pursuant to this chapter shall be guilty of a Class 1 misdemeanor for the first two violations and a Class 6 felony for a third and each subsequent violation within a three-year period.

In addition, licensed asbestos contractors, asbestos supervisors, asbestos inspectors, asbestos management planners, asbestos project designers, asbestos project monitors, asbestos analytical laboratories and asbestos workers, lead contractors, lead inspectors, lead risk assessors, lead project designers, lead supervisors, lead workers, renovators, dust sampling technicians, renovation contractors, and accredited asbestos training programs, accredited lead training programs, accredited renovator training programs, training managers or principal instructors may be assessed a civil penalty by the Board of not more than $1,000 for an initial violation and $5,000 for each subsequent violation within a three-year period arising from a willful violation of standards established by the Environmental Protection Agency, Occupational Safety and Health Administration, Department of Labor and Industry, or the Divisions of Air Pollution Control and Waste Management of the Department of Environmental Quality in a three-year period.

1987, c. 579, § 54-145.10:11; 1988, cc. 765, 802; 1989, c. 397; 1990, c. 823; 1993, c. 660; 1994, cc. 185, 911; 1996, cc. 180, 846; 1997, c. 885; 1998, c. 739; 2009, c. 819.

Article 2. Home Inspectors

§ 54.1-517.1. Repealed

Repealed by Acts cc. 161 and 436, cl. 2, effective July 1, 2017.

§ 54.1-517.2. Requirements for licensure

A. The Board shall issue a license to practice as a home inspector in the Commonwealth to:

1. An individual who holds an unexpired certificate as a home inspector issued prior to June 30, 2017; or

2. An applicant who has successfully:

a. Completed the educational requirements as required by the Board;

b. Completed the experience requirements as required by the Board; and

c. Passed the examination approved by the Board.

B. The Board shall issue a license with the new residential structure endorsement to any applicant who completes a training module developed by the Board in conjunction with the Department of Housing and Community Development based on the International Residential Code component of the Virginia Uniform Statewide Building Code.

2001, c. 723; 2015, c. 411; 2016, cc. 161, 436.

§ 54.1-517.2:1. Home inspection; required statement related to the presence of yellow shaded corrugated stainless steel tubing

A. As used in this section:

"Bonding" means connecting metallic systems to establish electrical continuity and conductivity.

"Corrugated stainless steel tubing" or "CSST" means a flexible stainless steel pipe used to supply natural gas or propane in residential, commercial, and industrial structures.

"Grounding" means connecting to the ground or to a conductive body that extends to ground connection.

B. If a home inspector observes the presence of any shade of yellow corrugated stainless steel tubing during a home inspection in a home that was built prior to the adoption of the 2006 Virginia Construction Code, effective May 1, 2008, he shall include that observation in the report along with the following statement: "Manufacturers believe that this product is safer if properly bonded and grounded as required by the manufacturer's installation instructions. Proper bonding and grounding of the product should be determined by a contractor licensed to perform the work in the Commonwealth of Virginia."

2017, c. 805.

Article 3. Mold Inspectors and Remediators

§§ 54.1-517.3 through 54.1-517.5. Repealed

Repealed by Acts 2012, cc. 803 and 835, cl. 56.

The chapters of the acts of assembly referenced in the historical citation at the end of this section(s) may not constitute a comprehensive list of such chapters and may exclude chapters whose provisions have expired.

COMMONWEALTH OF VIRGINIA
VIRGINIA BOARD FOR ASBESTOS, LEAD, AND HOME INSPECTORS

VIRGINIA ASBESTOS LICENSING REGULATIONS

Last Updated April 1, 2021

STATUTES
Title 54.1, Chapter 5

Department of Professional and Occupational Regulation
9960 Mayland Drive, Suite 400
Richmond, VA 23233
(804) 367-8500
www.dpor.virginia.gov

SUMMARY OF SIGNIFICANT CHANGES

Included in this document are relevant excerpts from the Virginia Administrative Code. Please note that the Virginia Board for Asbestos, Lead, and Home Inspectors is responsible for promulgating regulations in accordance with the Administrative Process Act (§ 2.2-4000 et seq.), and the Virginia Code Commission is responsible for compiling and codifying all of the administrative regulations of state agencies into the Virginia Administrative Code.

It is your responsibility to stay informed and follow all regulations and statutes governing your profession or occupation. As a regulant of the Board, you should read and become familiar with all regulations applicable to your profession or occupation. You can stay informed of regulatory actions that may result in changes to the regulations at Virginia Regulatory Town Hall (www.townhall.virginia.gov).

This document is a complete, edited (unofficial) copy of the Virginia Asbestos Licensing Regulations (18VAC15-20). Please refer to the Virginia Administrative Code for an official copy of the regulations applicable to your profession or occupation. You can access the Virginia Administrative Code online at http://law.lis.virginia.gov/admincode.

The following is a brief summary of the significant changes to the Virginia Asbestos Licensing Regulations effective April 1, 2021.

- License renewal and late renewal fees for licenses are temporarily reduced. For licenses expiring after February 1, 2021, and before February 1, 2023, the renewal fee is $25 for individual asbestos licenses (worker, supervisor, inspector, management planner, project designer, and project monitor); $40 for asbestos analytical laboratory licenses and branch offices; $30 for asbestos contractor licenses; and $40 for accredited asbestos training program approvals. For late renewals received after March 1, 2021, and on or before February 28, 2023, the late renewal fee is $60 for individual asbestos license; $75 for asbestos analytical laboratory licenses and branch offices; $65 for asbestos contractor licenses; and $75 for accredited asbestos training program approvals.

STATEMENT OF PURPOSE

This booklet contains the information you will need to obtain your asbestos license. The law that governs your profession is found in Chapter 5 (§ 54.1-500 et seq.) of Title 54.1 of the Code of Virginia. That law permits the board to issue regulations that tell you more about what is expected of you in your profession. This booklet contains a copy of the regulations that you will need to know and with which you must comply in order to obtain and retain your license.

BE SURE TO READ AND UNDERSTAND THE STANDARDS OF CONDUCT AND PRACTICE. FAILURE TO COMPLY WITH THESE STANDARDS COULD RESULT IN A MONETARY PENALTY, THE LOSS OF YOUR LICENSE, OR OTHER DISCIPLINARY ACTION.

It is the goal of the Department of Professional and Occupational Regulation to provide you with the information you need to comply with the law and regulations. If you have a question and cannot find the answer to it in this document, please write to:

Virginia Board for Asbestos, Lead, and Home Inspectors
Department of Professional and Occupational Regulation
9960 Mayland Drive, Suite 400
Richmond, VA 23233

or call the Agency at (804) 367-8595 or e-mail ALHI@dpor.virginia.gov.

TABLE OF CONTENTS

REGULATIONS:

STATUTES:

PART I.

SCOPE

18VAC15-20-10. Scope.

The purpose of this section is to identify persons, as defined in 18VAC15-20-20, who need to be licensed.

Asbestos Contractor's License: Required for firms that contract with another person, for compensation, to carry out an asbestos abatement project that exceeds 10 linear or 10 square feet.

Asbestos Worker's License: Required for individuals who remove or otherwise engage in an asbestos project.*

Asbestos Supervisor's License: Required for individuals who supervise an asbestos abatement project. The Commonwealth of Virginia National Emission Standards for Hazardous Air Pollutants (NESHAP) Program recognizes the "competent person" as an individual licensed under this classification.*

Asbestos Inspector's License: Required for individuals who inspect buildings to identify asbestos-containing material.*

Asbestos Management Planner's License: Required for individuals who prepare or update an asbestos management plan.*

Asbestos Project Monitor's License: Required for individuals who act as a project monitor on asbestos abatement sites.

Asbestos Analytical Laboratory License: Required for firms serving as laboratories that analyze air or bulk samples for the presence of asbestos by polarized light microscopy (PLM), phase contrast microscopy (PCM), or transmission electron microscopy (TEM). A laboratory that has multiple locations shall obtain an asbestos analytical laboratory license for the main office, and submit the remaining offices as branch offices in accordance with this chapter.

Asbestos Project Designer's License: Required for individuals who prepare or update an asbestos abatement project design, specifications for asbestos abatement projects, and addenda to the specifications.*

Accredited Asbestos Training Program: Approval from the board is required for those who offer asbestos training programs to individuals seeking licensure as an asbestos worker, supervisor, inspector, management planner, project monitor or project designer.

*Employees who conduct asbestos response actions, inspections, prepare management plans or

project designs for their employer, on property owned or leased by the employer, are exempt from Virginia asbestos licensure; however, they are required to meet all OSHA and EPA training requirements.

Historical Notes

Derived from VR137-01-02 § 1.1, eff. September 1, 1994; amended, Virginia Register Volume 18, Issue 6, eff. January 2, 2002; Volume 35, Issue 20, eff. September 1, 2019.

PART II.

DEFINITIONS AND GENERAL

18VAC15-20-20. Definitions.

The following words and terms when used in this chapter shall have the following meanings unless the context clearly indicates otherwise:

"AAR" means the Asbestos Analysts Registry program offered by the AIHA Registry Programs.

"AAT" means Asbestos Analyst Testing.

"Accredited asbestos training program" means a training program that has been approved by the board to provide training for individuals to engage in asbestos abatement, conduct asbestos inspections, prepare management plans, prepare project designs or act as a project monitor.

"Accredited asbestos training provider" means a firm or individual who has been approved by the board to offer an accredited asbestos training program.

"AHERA" means Asbestos Hazard Emergency Response Act, 40 CFR Part 763, Subpart E.

"AIHA" means American Industrial Hygiene Association.

"Approval letter" means a written notice confirming the firm or individual applicant's licensure or accreditation by the board.

"Asbestos" means the asbestiform varieties of actinolite, amosite, anthophyllite, chrysotile, crocidolite, and tremolite.

"Asbestos Analytical Laboratory License" means an authorization issued by the board to perform phase contrast, polarized light, or transmission electron microscopy on material known or suspected to contain asbestos.

"Asbestos-containing material" or "ACM" means any material or product which contains more than 1.0% asbestos or such percentage as established by EPA final rule.

"Asbestos contractor" means any person who has met the board's requirements and has been issued an asbestos contractor's license by the board to enter into contracts to perform asbestos projects.

"Asbestos Contractor's License" means an authorization issued by the board permitting a person to enter into contracts to perform an asbestos abatement project.

"Asbestos inspector" means any person who performs an inspection as defined in this chapter.

"Asbestos Inspector's License" means an authorization issued by the board permitting a person to perform onsite investigations to identify, classify, record, sample, test and prioritize by exposure potential asbestos-containing materials.

"Asbestos Management Plan" means a program designed to control or abate any potential risk to human health from asbestos.

"Asbestos management planner" means any person preparing or updating a management plan.

"Asbestos Management Planner's License" means an authorization issued by the board permitting a person to prepare or update an asbestos management plan.

"Asbestos project" or "asbestos abatement project" means an activity involving job set-up for containment, removal, encapsulation, enclosure, encasement, renovation, repair, construction or alteration of asbestos-containing materials. An asbestos project or asbestos abatement project shall not include nonfriable asbestos-containing roofing, flooring and siding material which when installed, encapsulated or removed does not become friable.

"Asbestos project design" means any descriptive form written as instructions or drafted as a plan describing the construction of an asbestos abatement area or site, response action or work practices to be utilized on the asbestos abatement project.

"Asbestos project designer" means any person providing an asbestos project design or specifications for an asbestos abatement project.

"Asbestos Project Designer's License" means an authorization issued by the board permitting a person to design an asbestos abatement project.

"Asbestos project monitor" means any person hired by a building owner, lessee or his agent to monitor, inspect, provide visual clearance or clearance monitoring of an asbestos abatement project.

"Asbestos Project Monitor's License" means an authorization issued by the board permitting a person to monitor an asbestos project, subject to board regulations.

"Asbestos supervisor" means any person so designated by an asbestos contractor who provides onsite supervision and direction to the workers engaged in asbestos projects.

"Asbestos Supervisor's License" means an authorization issued by the board permitting an individual to supervise and work on an asbestos project.

"Asbestos worker" means any person who engages in an asbestos abatement project.

"Asbestos Worker's License" means an authorization issued by the board permitting an individual to work on an asbestos project.

"ASHARA" means Asbestos School Hazard Abatement Reauthorization Act, 40 CFR Part 763, Subpart E.

"BAPAT" means the Bulk Asbestos Proficiency Analytical Testing Program of the AIHA Proficiency Analytical Testing Programs.

"Board" means the Virginia Board for Asbestos, Lead, and Home Inspectors.

"Department" means the Department of Professional and Occupational Regulation.

"Direct supervision" means a licensed or accredited inspector, management planner, project monitor or project designer, who undertakes to supervise the activities of an unlicensed inspector, management planner, project monitor or project designer, shall be physically present on the premises at all times while any unlicensed inspector, management planner, project monitor or project designer under his supervision is engaged in the activities of an inspector, management planner, project monitor or project designer.

"Director" means the Director of the Department of Professional and Occupational Regulation.

"Employee" means all persons in the service of another under any contract of hire, express or implied, oral or written.

"Encapsulation" means the treatment of asbestos-containing material (ACM) with a material that surrounds or embeds asbestos fibers in an adhesive matrix to prevent the release of fibers, as the encapsulant creates a membrane over the surface (bridging encapsulant) or penetrates the material and binds its components together (penetrating encapsulant).

"Encasement" means any process by which an asbestos-containing material (ACM) is sprayed with an insulating sealer which is then mechanically fastened to the asbestos covered substrate. The insulating sealer is then covered with a sealer to give structural strength and durability.

"Enclosure" means the construction or installation over or around the asbestos-containing material (ACM) of any leak tight solid or flexible coverings, which will not deteriorate or decompose for an extended period of time, so as to conceal the ACM, contain ACM fibers, and render the ACM inaccessible.

"Environmental remediation activity" means any activity planned or carried out for the purpose of reducing or eliminating any environmental hazard, including activities necessary to train individuals in the proper or lawful conduct of such activities, which are regulated by federal or state law or regulation.

"EPA" means U.S. Environmental Protection Agency.

"Financial interest" means financial benefit accruing to an individual or to a member of his immediate family. Such interest shall exist by reason of (i) ownership in a business if the ownership exceeds 3.0% of the total equity of the business; (ii) annual gross income that exceeds, or may be reasonably anticipated to exceed $1,000 from ownership in real or personal property or a business; (iii) salary, other compensation, fringe benefits, or benefits from the use of property, or any combination of it, paid or provided by a business that exceeds or may be reasonably expected to exceed $1,000 annually; (iv) ownership of real or personal property if the interest exceeds $1,000 in value and excluding ownership in business, income, salary, other compensation, fringe benefits or benefits from the use of property.

"Firm" means any company, partnership, corporation, sole proprietorship, association, or other business entity.

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

"Guest instructor" means an instructor who is invited to instruct a specific topic or topics in an accredited asbestos training program and whose instruction is limited to two hours per day.

"Hands-on experience" means the physical participation of students in an asbestos training program. The physical participation includes mock sampling and inspection techniques, report preparation, writing project specifications, glovebag demonstrations and containment construction.

"IHLAP" means the Industrial Hygiene Laboratory Accreditation Program of the AIHA Laboratory Accreditation Programs, LLC.

"IHPAT" means the Industrial Hygiene Proficiency Analytical Testing Program of the AIHA Proficiency Analytical Testing Programs, LLC.

"Immediate family" means (i) a spouse, (ii) a sibling or step sibling, (iii) a parent or step parent, (iv) children or step children, or (v) any other person residing in the same household as the individual.

"Inspection" means an activity undertaken to determine the presence or location, or to access the condition of, friable or nonfriable asbestos-containing material (ACM) or suspected ACM, whether by visual or physical examination, or by collecting samples of such material. This term includes reinspections of friable and nonfriable known or assumed ACM that has been previously identified. The term does not include the following:

1. Periodic surveillance of the type described in 40 CFR 763.92(b) solely for the purpose of recording or reporting a change in the condition of known or assumed ACM;

2. Inspections performed by employees or agents of federal, state, or local governments solely for the purpose of determining compliance with applicable statutes or regulations; or

3. Visual inspections solely for the purpose of determining completion of response actions.

"Instructor" means a person who instructs one or more accredited asbestos training programs, to include the principal instructor, but excluding guest instructors.

"Licensee" means any person, as "person" is defined by **§ 54.1-500** of the Code of Virginia, who has been issued and holds a currently valid license as an asbestos worker, asbestos supervisor, asbestos inspector, asbestos management planner, asbestos project designer, asbestos project monitor or asbestos contractor under this chapter.

"NIOSH" means National Institute of Occupational Safety and Health.

"NIST" means National Institute of Standards and Technology.

"NVLAP" means the Asbestos Fiber Analysis Program of the National Institute of Standards and Technology National Voluntary Laboratory Accreditation Program.

"Occupied" means any area of any building designed or intended for human occupancy for any purpose.

"OSHA" means the U.S. Department of Labor Occupational Safety and Health Administration.

"OSHA Class III Work" means repair and maintenance operations where asbestos-containing material (ACM), including thermal system insulation and surfacing material, is likely to be disturbed.

"PAT" means proficiency analytical testing.

"PCM" means phase contrast microscopy.

"Person" means a firm, individual, or any other entity.

"PLM" means polarized light microscopy.

"Preliminary review" means a review conducted by the department following the submission of

training materials to ascertain if the proposed asbestos training program meets the standards established by this chapter.

"Principal instructor" means an instructor whose main responsibility is to instruct accredited asbestos training programs, supervise other instructors, and manage the overall asbestos training program curriculum.

"Removal" means the physical removal of asbestos-containing material (ACM) in accordance with all applicable regulations.

"Renovation" means altering in any way, one or more facility components.

"Repair" means returning damaged asbestos-containing material (ACM) to an undamaged condition or to an intact state so as to prevent fiber release.

"Residential buildings" means site-built homes, modular homes, condominium units, mobile homes, manufactured housing, and duplexes, or other multi-unit dwellings consisting of four units or fewer that are currently in use or intended for use only for residential purposes.

"Response action" means any method, including removal, encapsulation, enclosure, encasement, or operation and maintenance, that protects human health and the environment from friable asbestos-containing material.

"Responsible individual" means the employee, officer, manager, owner, or principal of the firm who shall be designated by each firm to ensure compliance with Chapter 5 (**§ 54.1-500** et seq.) of Title 54.1 of the Code of Virginia and all regulations of the board and to receive communications and notices from the board that may affect the firm. In the case of a sole proprietorship, the sole proprietor shall be the responsible individual.

"Substantial change" means a change in overall asbestos training program, materials, principal instructors, training managers, directors, ownership, facilities, equipment, examinations, and certificates of completion. The addition of updated regulations, exam questions or news articles shall not be considered a substantial change.

"TEM" means transmission electron microscopy.

"Training manager" means the individual responsible for administering a training program and monitoring the performance of the instructors.

"Visual inspection" means a process of looking for conditions that if not corrected during the asbestos abatement project, will lead to residual asbestos-containing dust or debris. Visual inspection includes examination of an asbestos abatement project area prior to clearance air monitoring for evidence that the project has been successfully completed as indicated by the absence of residue, dust and debris.

Historical Notes
Derived from VR137-01-02 § 2.1, eff. September 1, 1994; amended, Virginia Register Volume 18, Issue 6, eff. January 2, 2002; Volume 23, Issue 3, eff. December 1, 2006; Volume 35, Issue 20, eff. September 1, 2019.

18VAC15-20-21. Waiver of the requirements of this chapter.

Except as required by law, the board may, in its reasonable discretion, waive any of the requirements of this chapter when in its judgment it finds that the waiver in no way lessens the protection provided by this chapter and Title 54.1 of the Code of Virginia to the public health, safety and welfare. The burden of proof that demonstrates continued public protection rests with the party requesting the waiver. Documents referenced are in effect as they existed as of the date the act or action has occurred.

Historical Notes
Derived from Virginia Register Volume 18, Issue 6, eff. January 2, 2002.

18VAC15-20-30. [Repealed]

Historical Notes
Derived from VR137-01-02 § 3.1, eff. September 1, 1994; amended, Virginia Register Volume 18, Issue 6, eff. January 2, 2002; repealed, Virginia Register Volume 23, Issue 3, eff. December 1, 2006.

PART III.

ENTRY

18VAC15-20-31. Application procedures.

All applicants seeking licensure shall submit an application with the appropriate fee specified in 18VAC15-20-52. Application shall be made on forms provided by the department.

By signing the application or submitting it electronically to the department, the applicant certifies that he has read and understands the board's statutes and regulations.

The receipt of an application and the deposit of fees by the board does not indicate approval by the board.

The board may make further inquiries and investigations with respect to the applicant's qualifications to confirm or amplify information supplied.

Applicants will be notified if their application is incomplete. Applicants who fail to complete the process within 12 months after the date the department receives the application shall submit a new application and fee.

Historical Notes
Derived from Virginia Register Volume 23, Issue 3, eff. December 1, 2006.

18VAC15-20-32. Qualifications for licensure—individuals.

A. General. Applicants shall meet all applicable entry requirements at the time application is made.

B. Name. The applicant shall disclose his full legal name.

C. Age. The applicant shall be at least 18 years old.

D. Address. The applicant shall disclose a physical address. A post office box is only acceptable when a physical address is also provided.

E. Specific entry requirements.

1. Worker. Each individual applying for an initial asbestos worker license shall provide proof of successful completion of (i) an EPA/AHERA or board-approved initial accredited asbestos worker training program and all subsequent EPA/AHERA or board-approved accredited asbestos worker refresher training programs or (ii) an EPA/AHERA or board-approved initial accredited supervisor

training program and all subsequent EPA/AHERA or board-approved accredited asbestos supervisor refresher training programs. The training certificate must indicate that the training was taken within 12 months preceding the date the department receives the application.

2. Supervisor. Each individual applying for an initial asbestos supervisor license shall provide proof of successful completion of an EPA/AHERA or board-approved initial accredited supervisor training program and all subsequent EPA/AHERA or board-approved accredited asbestos supervisor refresher training programs. The training certificate must indicate that the training was taken within 12 months preceding the date the department receives the application.

3. Inspector.

a. Each individual applying for an initial asbestos inspector license shall provide:

(1) Proof of successful completion of an EPA/AHERA or board- approved initial accredited inspector training program and all subsequent EPA/AHERA or board-approved accredited asbestos inspector refresher training programs; and

(2) Evidence of experience in performing asbestos inspections in buildings or industrial facilities, including collecting bulk samples, categorizing ACM, assessing ACM and preparing inspection reports. The amount of experience required is dependent on the applicant's formal education and is as follows:

(a) An applicant with a bachelor's degree in engineering, architecture, industrial hygiene, physical science or a related field shall have at least six months' experience or have completed a minimum of five inspections;

(b) An applicant with a two-year associate's degree in engineering, architecture, industrial hygiene, physical science or a related field shall have at least 12 months' experience or have completed a minimum of 10 inspections; or

(c) An applicant with a high school diploma shall have at least 24 months' experience or have completed a minimum of 15 inspections.

b. Experience may be obtained by:

(1) Conducting asbestos inspections in jurisdictions outside of Virginia in accordance with all federal, state and local statutes.

(2) Conducting asbestos inspections under the direct supervision, as defined in this chapter, of a licensed inspector or EPA-accredited inspector where no license is required. All reports prepared by the unlicensed individual shall be signed by the licensed or EPA- accredited inspector in charge. The licensed or EPA-accredited inspector assumes responsibility for all sampling and reports prepared by the unlicensed individual.

4. Management planner.

a. Each individual applying for an initial asbestos management planner license shall provide:

(1) Proof of successful completion of an EPA/AHERA or board- approved initial accredited management planner training program and all subsequent EPA/AHERA or board-approved accredited asbestos management planner refresher training programs; and

(2) Evidence of experience evaluating inspection reports, selecting response actions, analyzing the cost of response actions, ranking response actions, preparing operations and maintenance plans and preparing management plans. The amount of experience required is dependent on the applicant's formal education and is as follows:

(a) An applicant with a bachelor's degree in engineering, architecture, industrial hygiene, physical science or a related field shall have at least six months' experience or shall have completed a minimum of five management plans.

(b) An applicant with a two-year associate's degree in engineering, architecture, industrial hygiene, physical science or a related field shall have at least 12 months' experience or shall have completed a minimum of 10 management plans.

(c) An applicant with a high school diploma shall have at least 24 months' experience or shall have completed a minimum of 15 management plans.

b. Experience may be obtained by:

(1) Preparing management plans or conducting asbestos inspections in jurisdictions outside of Virginia in accordance with all federal, state and local statutes; or

(2) Preparing management plans or conducting asbestos inspections under the

direct supervision, as defined in this chapter, of a licensed management planner or inspector, or EPA-accredited management planner or inspector where no license is required. All reports prepared by the unlicensed individual shall be signed by the licensed or EPA-accredited management planner or inspector in charge. The licensed or EPA-accredited management planner or inspector assumes responsibility for all sampling and reports prepared by the unlicensed individual.

5. Project designer.

a. Each individual applying for an initial asbestos project designer license shall provide:

(1) Proof of successful completion of an EPA/AHERA or board- approved initial accredited project designer training program and all subsequent EPA/AHERA or board-approved accredited asbestos project designer refresher training programs; and

(2) Evidence of experience in the preparation of project designs or project specifications. The amount of experience required is dependent on the applicant's formal education and is as follows:

(a) An applicant with a bachelor's degree in engineering, architecture, industrial hygiene, physical science or a related field shall have six months' experience or shall have completed a minimum of five project designs.

(b) An applicant with a two-year associate's degree in engineering, architecture, industrial hygiene, physical science or related field shall have 12 months' experience or shall have completed a minimum of 10 project designs.

(c) An applicant with a high school diploma shall have at least 24 months' experience or shall have completed a minimum of 15 project designs.

b. Experience may be obtained by:

(1) Preparing asbestos project designs in jurisdictions outside of Virginia in accordance with all federal, state and local statutes.

(2) Preparing asbestos project designs under the direct supervision, as defined in this chapter, of a licensed asbestos project designer, or EPA-accredited asbestos project designer where no license is required. All project designs prepared by the unlicensed individual shall be signed by the licensed EPA-

accredited project designer in charge. The licensed or EPA-accredited project designer assumes responsibility for all project design reports prepared by the unlicensed individual.

6. Project monitor.

a. Each individual applying for an initial asbestos project monitor license shall provide:

(1) Proof of (i) a current certification by EPA as an asbestos project designer or asbestos supervisor and successful completion of a board-approved asbestos project monitor training program of 16 hours, including the examination or (ii) successful completion of a board-approved asbestos project monitor training program of 40 hours, including examination. Only project monitor training programs that are board approved shall be accepted for meeting the training requirement; and

(2) Evidence of 160 hours of experience in performing asbestos project monitoring through field work on project sites. This includes, but is not limited to, evaluating and monitoring asbestos work practices, collecting environmental asbestos air samples during abatement, performing visual inspections and taking final air samples to grant clearance for asbestos abatement projects.

b. Experience may be obtained by:

(1) Acting as an asbestos project monitor in jurisdictions outside of Virginia in accordance with all federal, state and local statutes.

(2) Acting as an asbestos project monitor under the direct supervision, as defined in this chapter, of a licensed asbestos project monitor or an accredited asbestos project monitor where no license is required. All project monitoring reports prepared by the unlicensed individual shall be signed by the licensed or accredited project monitor in charge. The licensed or accredited project monitor assumes responsibility for all reports and documents prepared by the unlicensed individual.

F. Experience and education verification. Each application for inspector, management planner, project monitor and project designer shall include a completed Experience Verification Form signed by a supervisor verifying the applicant's experience. In lieu of a verifying signature for experience, an applicant who is self employed may submit a copy of three completed inspections, management plans, project designs or project monitor reports, whichever is applicable. A letter from a supervisor verifying the experience may be submitted in lieu of the Experience Verification Form. If verification of a degree is required, the Education Verification Form shall be sent directly from the school to the department.

G. Conviction or guilt. The applicant shall not have been convicted or found guilty, regardless of adjudication, in any jurisdiction of any felony or of any misdemeanor involving lying, cheating or stealing or any violation while engaged in environmental remediation activity that resulted in the significant harm or the imminent and substantial threat of significant harm to human health or the environment, there being no appeal pending therefrom or the time of appeal having lapsed. Any plea of nolo contendre shall be considered a conviction for the purposes of this section. The record of conviction, finding or case decision shall be considered prima facie evidence of a conviction or finding of guilt. The board, at its discretion, may deny licensure or certification to any applicant in accordance with § 54.1-204 of the Code of Virginia.

H. Standards of practice and conduct. Applicants shall be in compliance with the standards of practice and conduct set forth in 18VAC15-20-400 through 18VAC15-20-450 and 18VAC455 through 18VAC15-20-459.1, as applicable at the time of application to the board, while the application is under review by the board, and at all times when the license is in effect.

I. Standing. The applicant shall be in good standing in every jurisdiction where licensed and the applicant shall not have had a license that was suspended, revoked or surrendered in connection with any disciplinary action in any jurisdiction prior to applying for licensure in Virginia. The board, at its discretion, may deny licensure or certification to any applicant based on disciplinary action by any jurisdiction.

Historical Notes
Derived from Virginia Register Volume 23, Issue 3, eff. December 1, 2006.

18VAC15-20-33. General qualifications for licensure: firms.

A. Each firm applying for a license shall meet the requirements of this section.

B. The applicant shall disclose the name under which the business entity conducts business and holds itself out to the public. The firm shall register trade or fictitious names, when applicable, with the State Corporation Commission in accordance with Chapter 5 (§ 59.1-69 et seq.) of Title 59.1 of the Code of Virginia before submitting an application to the board.

C. The applicant shall disclose the firm's mailing address and the firm's physical address. A post office box is only acceptable as a mailing address when a physical address is also provided.

D. Applicants shall meet the additional requirements listed in this subsection for the firm's form of organization:

1. Corporations. Applicants shall have been incorporated in the Commonwealth of

Virginia or, if a foreign corporation, shall have obtained a certificate of authority to conduct business in Virginia from the State Corporation Commission in accordance with requirements governing corporations pursuant to Title 13.1 of the Code of Virginia. Corporations shall be in good standing with the State Corporation Commission at the time of application to the board and at all times when the license is in effect.

2. Limited liability companies. Applicants shall have obtained a certificate of organization in the Commonwealth of Virginia or, if a foreign limited liability company, shall have obtained a certificate of registration to do business in Virginia from the State Corporation Commission in accordance with requirements governing limited liability companies pursuant to Title 13.1 of the Code of Virginia. Companies shall be in good standing with the State Corporation Commission at the time of application to the board and at all times when the license is in effect.

3. Partnerships. Applicants shall have a written partnership agreement. The partnership agreement shall state that asbestos abatement services of the partnership shall be under the direction and control of the appropriate asbestos abatement licensee.

E. In accordance with § 54.1-204 of the Code of Virginia, the applicant shall disclose the following information about the firm and its owners, officers, managers, members, and directors, as applicable:

1. All felony convictions;

2. All misdemeanor convictions involving lying, cheating, or stealing; and

3. Any conviction resulting from engaging in environmental remediation activity that resulted in the significant harm or the imminent and substantial threat of significant harm to human health or the environment.

Any plea of nolo contendre or finding of guilt, regardless of adjudication or deferred adjudication, shall be considered a conviction for the purposes of this section. The board, at its discretion, may deny licensure to any applicant in accordance with § 54.1-204 of the Code of Virginia. The applicant has the right to request further review of any such action by the board under the Administrative Process Act (§ 2.2-4000 et seq. of the Code of Virginia).

F. The applicant shall report (i) the suspension, revocation, or surrender of a license, certification, or registration in connection with a disciplinary action by any jurisdiction and (ii) whether the firm, owners, officers, managers, members, or directors have been the subject of discipline in any jurisdiction prior to applying for licensure and while the application is under review by the board. The board, at its discretion, may deny licensure to an applicant based on disciplinary action by any jurisdiction.

G. The board may deny the application of an applicant who is shown to have a substantial identity of interest with a person whose license or certificate has been revoked or not renewed by the board. A substantial identity of interest includes (i) a controlling financial interest by the individual or corporate principals of the person whose license or certificate has been revoked or has not been renewed or (ii) substantially identical owners, officers, managers, members, or directors, as applicable.

H. An applicant shall not knowingly make a materially false statement, submit falsified documents, or fail to disclose a material fact requested in connection with an application submitted to the board.

Historical Notes
Derived from Virginia Register Volume 23, Issue 3, eff. December 1, 2006; Errata 23:5 VA.R. 791 November 13, 2006; amended Volume 35, Issue 20, eff. September 1, 2019; Volume 36, Issue 15, eff. May 1, 2020.

18VAC15-20-33.1. Qualifications for asbestos contractor license.

In addition to the requirements of 18VAC15-20-33, each applicant for an asbestos contractor license shall hold a valid Virginia contractor license issued by the Virginia Board for Contractors with an asbestos contracting specialty and shall be in compliance with all other requirements found in Chapter 11 (§ 54.1-1100 et seq.) of Title 54.1 of the Code of Virginia governing the regulation of contractors.

Historical Notes
Derived from Virginia Register Volume 35, Issue 20, eff. September 1, 2019.

18VAC15-20-33.2. Qualifications for asbestos analytical laboratory license.

A. In addition to the requirements of 18VAC15-20-33, each applicant for an asbestos analytical laboratory license shall submit evidence of meeting the standards to perform one or more of PLM, PCM, or TEM analysis.

1. For PLM analysis, one of the following:

a. Current NVLAP accreditation demonstrated by submittal of a copy of the Certificate of Accreditation, Scope of Accreditation, and documentation of proficiency with the application;

b. The asbestos analytical laboratory is rated "proficient" in the BAPAT Program and maintains the training and quality control document such as is necessary to demonstrate competency in performing analysis; or

c. The asbestos analytical laboratory is accredited under the IHLAP and maintains the training and quality control documentation such as is necessary

to demonstrate competency.

2. For PCM analysis, each analyst shall have completed the NIOSH 582 or NIOSH 582 Equivalency course. In addition, at least one of the following must be satisfied:

a. At fixed laboratory sites, one of the following qualifications must be met:

(1) The asbestos analytical laboratory is accredited under the IHLAP and maintains the training and quality control documentation such as is necessary to demonstrate competency;

(2) The asbestos analytical laboratory is rated "proficient" in the IHPAT Program and maintains the training and quality control document such as is necessary to demonstrate competency in performing analysis; or

(3) Each analyst is listed in the AAR and has a performance rating of "acceptable" for the most recent AAT round.

b. For onsite analysis, one of the following qualifications must be met:

(1) The asbestos analytical laboratory is rated "proficient" in the IHPAT Program and maintains the training and quality control document such as is necessary to demonstrate competency in performing onsite analysis for each onsite analyst;

(2) The asbestos analytical laboratory is accredited under the IHLAP and maintains compliance with the requirements of its accreditation, as well as the training and quality control document such as is necessary to demonstrate competency in performing onsite analysis for each onsite analyst; or

(3) Each analyst is listed in the AAR and has a performance rating of "acceptable" for the most recent AAT round.

3. For TEM analysis, a current accreditation by NVLAP to analyze asbestos airborne fibers using TEM. A copy of the NVLAP Certificate of Accreditation, Scope of Accreditation, and documentation of NVLAP proficiency shall be submitted with the application.

B. The applicant shall name a responsible individual for the asbestos analytical laboratory.

C. Any branch office of an asbestos analytical laboratory shall complete a branch office

application from the board. Each branch office shall name a resident responsible individual at each branch office.

D. The branch office application shall provide the information contained in subsection A of this section for the applicable branch office.

E. Any of the training and quality control documentation required to be maintained pursuant to this section shall be provided to the board upon request.

Historical Notes
Derived from Virginia Register Volume 35, Issue 20, eff. September 1, 2019.

18VAC15-20-34. Qualifications for accredited asbestos training program approval.

A. Training programs desiring board approval shall meet the minimum requirements established in this chapter. Persons requesting approval as an accredited asbestos training program to prepare training program participants for licensure requirements shall submit an accredited asbestos Training Program Review and Audit Application with the following required information:

1. Training provider's business name, physical address, mailing address, and phone number.

2. Copies of approval letters issued by EPA or other states granting approval of asbestos training programs presented by the provider.

3. Applicable fee specified in 18VAC15-20-52.

4. The training program curriculum.

5. A narrative explanation that states how the training program meets the requirements for approval in the following areas:

   a. Length of training in hours.

   b. Amount and type of hands-on training.

   c. Examinations (length, format and passing score).

   d. Topics covered in the training program.

   e. Assurances of test security and how exams are administered.

6. A copy of all training program materials including, but not limited to, student manuals, instructor notebooks, handouts, and training aids.

7. A copy of the examination(s) used and applicable answer sheets.

8. The names and qualifications, including education and experience, of each instructor and subject areas that each instructor will teach.

9. A description of and an example of a certificate that will be issued to students who successfully complete the accredited asbestos training program. The certificate shall contain the information required by this chapter.

10. A proposed training program date for auditing purposes. The proposed date will be confirmed or an alternate date will be proposed within 10 business days after receipt of a complete accredited asbestos training program submission and the required fee.

B. A complete submission shall consist of all information required by this section. Receipt of application and deposit of fees by the department in no way indicates approval of a training program.

C. A complete application shall be submitted to the department no less than 45 days prior to the requested audit date.

D. Upon receipt of a completed application, a preliminary review will be conducted to ensure all written material and other documentation is accurate and up to date. If any deficiencies are noted, a letter will be sent to the applicant indicating the deficiencies and necessary steps to correct them. All deficiencies noted during the preliminary review shall be corrected prior to the on-site audit.

E. Upon successful completion of the preliminary review, an on-site audit shall be conducted to complete the application process. If any deficiencies are noted during the audit, the training provider will be informed, either in writing or verbally, and offered an opportunity to correct them. Once the audit is complete and any deficiencies corrected, a letter of approval will be sent to the accredited asbestos training program.

F. All accredited asbestos training programs approved by the board shall have a monitored, final written examination, except for asbestos workers needing an oral examination. The board recommends the examination include a practical component to test skill in asbestos abatement techniques. Students shall obtain a minimum examination grade of 70% correct. Records of the participant's examination shall be maintained in accordance with this chapter.

G. Letters of approval for accredited asbestos training programs shall be maintained at the business address listed on the approval letter and made accessible to the public. Each provider of an approved accredited asbestos training program shall maintain all records at the business address. The required records shall be available for review upon demand by

the board or its representatives.

Historical Notes
Derived from Virginia Register Volume 23, Issue 3, eff. December 1, 2006.

18VAC15-20-40. [Repealed]

Historical Notes
Derived from VR137-01-02 § 3.2, eff. September 1, 1994; amended, Virginia Register Volume 18, Issue 6, eff. January 2, 2002; repealed, Virginia Register Volume 23, Issue 3, eff. December 1, 2006.

18VAC15-20-50. [Repealed]

Historical Notes
Derived from VR137-01-02 § 3.3, eff. September 1, 1994; amended, Virginia Register Volume 13, Issue 10, eff. April 1, 1997; Volume 16, Issue 11, eff. May 1, 2000; Volume 18, Issue 6, eff. January 2, 2002; repealed, Virginia Register Volume 23, Issue 3, eff. December 1, 2006.

PART IV.

FEES

18VAC15-20-51. General fee requirements.

All fees are nonrefundable and shall not be prorated. The date on which the fee is received by the department or its agent will determine whether the fee is on time. Checks or money orders shall be made payable to the Treasurer of Virginia.

Historical Notes
Derived from Virginia Register Volume 23, Issue 3, eff. December 1, 2006.

18VAC15-20-52. Application fees.

Application fees are set out in this section.

Fee Type	Fee Amount	When Due
Application for worker, supervisor, inspector, management planner, project designer or project monitor license	$80	With application
Application for asbestos analytical laboratory license	$120	With application
Application for asbestos analytical laboratory branch office	$100	With application
Application for an asbestos contractor license	$110	With application
Application for accredited asbestos training program approval	$500 per day of training	With application

Historical Notes
Derived from Virginia Register Volume 23, Issue 3, eff. December 1, 2006; amended, Volume 31, Issue 15, eff. May 1, 2015; Volume 35, Issue 20, eff. September 1, 2019.

18VAC15-20-53. Renewal and late renewal fees.

A. Renewal and late renewal fees are set out in this section.

Fee Type	Fee Amount	When Due
Renewal for worker, supervisor, inspector, management planner, project designer or project monitor license	$45	With renewal application
Renewal for asbestos analytical laboratory license	$75	With renewal application
Renewal for asbestos analytical laboratory branch office	$55	With renewal application

Renewal for asbestos contractor's license	$70	With renewal application
Renewal for accredited asbestos training program approval	$125	With renewal application
Late renewal for worker, supervisor, inspector, management planner, project designer or project monitor license (includes a $35 late renewal fee in addition to the regular $45 renewal fee)	$80	With renewal application
Late renewal for asbestos analytical laboratory license (includes a $35 late renewal fee in addition to the regular $75 renewal fee)	$110	With renewal application
Late renewal for asbestos analytical laboratory branch office (includes $35 late renewal fee in addition to the regular $55 renewal fee)	$90	With renewal application
Late renewal for asbestos contractor's license (includes a $35 late renewal fee in addition to the regular $70 renewal fee)	$105	With renewal application
Late renewal for accredited asbestos training program approval (includes a $35 late renewal fee in addition to the regular $125 renewal fee)	$160	With renewal application

B. For licenses expiring after February 1, 2020, and before February 1, 2021, the renewal fees shall be as follows:

Renewal for worker, supervisor, inspector, management planner, project designer, or project monitor license	$40
Renewal for asbestos analytical laboratory license	$65
Renewal for asbestos contractor's license	$60
Renewal for accredited asbestos training program approval	$75

For late renewals received after March 1, 2020, and on or before February 28, 2021, the late renewal fees shall be as follows:

Late renewal for worker, supervisor, inspector, management planner, project designer, or project monitor license	$75
Late renewal for asbestos analytical laboratory license	$100
Late renewal for asbestos contractor's license	$95
Late renewal for accredited asbestos training program approval	$110

C. For licenses expiring after February 1, 2021, and before February 1, 2023, the renewal fees shall be as follows:

Renewal for worker, supervisor, inspector, management planner, project designer, or project monitor license	$25
Renewal for asbestos analytical laboratory license	$40
Renewal for asbestos analytical laboratory branch office	$40
Renewal for asbestos contractor's license	$30
Renewal for accredited asbestos training program approval	$40

For late renewals received after March 1, 2021, and on or before February 28, 2023, the late renewal fees shall be as follows:

Late renewal for worker, supervisor, inspector, management planner, project designer, or project monitor license	$60
Late renewal for asbestos analytical laboratory license	$75
Late renewal for asbestos analytical laboratory branch office	$75
Late renewal for asbestos contractor's license	$65
Late renewal for accredited asbestos training program approval	$75

Historical Notes

Derived from Virginia Register Volume 23, Issue 3, eff. December 1, 2006; amended, Volume 31, Issue 15, eff. May 1, 2015; Volume 34, Issue 8, eff. February 1, 2018; Volume 35, Issue 20, eff. September 1, 2019; Volume 36, Issue 9, eff. February 1, 2020; Volume 37, Issue 14, eff. April 1, 2021.

PART V.

RENEWAL

18VAC15-20-60. Renewal required.

A. Each individual asbestos license issued under this chapter shall expire one year from the last day of the month in which it was issued.

B. Each asbestos contractor and each asbestos analytical laboratory license issued under this chapter shall expire one year from the last day of the month in which it was issued.

C. Each accredited asbestos training program shall expire 24 months from the last day of the month in which it was approved.

D. A fee shall be required for renewal as specified in 18VAC15-20-53.

Historical Notes

Derived from VR137-01-02 § 3.4, eff. September 1, 1994; amended, Virginia Register Volume 18, Issue 6, eff. January 2, 2002; Volume 23, Issue 3, eff. December 1, 2006.

18VAC15-20-70. Procedures for renewal.

A. The department shall mail a renewal notice to each licensee and to each approved accredited asbestos training program at the last known address. The notice shall outline the procedures for renewal and the renewal fee amount. Failure to receive the notice shall not relieve the licensee or the approved accredited asbestos training program of the obligation to renew in a timely fashion.

B. Prior to the expiration date shown on the license or approval letter, each licensed asbestos contractor and licensed asbestos analytical laboratory desiring to renew the license shall return the renewal notice together with the appropriate fee specified in 18VAC15-20-53 to the department. Should the licensee fail to receive the renewal notice, a copy of the current license may be submitted with the required fee.

C. Prior to the expiration date shown on the individual's current license, the individual desiring to renew that license shall provide evidence of meeting the annual refresher training requirement for license renewal and the appropriate fee specified in 18VAC15-20-53. The board will accept any asbestos training programs that are approved by EPA/AHERA or the board. A copy of the training certificate documenting the successful completion of the refresher training for the license discipline being renewed and meeting the requirements outlined in this chapter shall accompany the renewal notice and fee.

D. Prior to the expiration date shown on the approval letter, each accredited asbestos training program desiring to renew the approval shall return the renewal notice to the department

together with the following:

1. Appropriate fee specified in 18VAC15-20-53.

2. Any changes made to the training program.

3. Dates on which the training material was last updated.

4. Statement indicating that the training program continues to meet the regulation requirements established in this chapter.

Should an approved accredited asbestos training program fail to receive the renewal notice, a letter indicating the desire to renew and the applicable fee may be submitted.

E. Project monitors who also hold a valid Virginia asbestos supervisor or project designer license may meet the renewal training requirements by completing the supervisor refresher or project designer refresher, whichever is applicable. Project monitors who hold only a project monitor license shall complete an accredited asbestos project monitor refresher training program to meet the renewal training requirements.

F. Annual refresher training certificates shall only be used once to renew an individual license.

G. Each license and each accredited asbestos training program approval that is not renewed within 30 days of the expiration date on the license or approval shall be subject to late renewal fees as established in 18VAC15-20-53.

H. Each license and each approved accredited asbestos training program not renewed within 12 months after the expiration date shall not be renewed and the licensee or approved accredited asbestos training program shall apply for a new license or new approval.

Historical Notes

Derived from VR137-01-02 § 3.5, eff. September 1, 1994; amended, Virginia Register Volume 18, Issue 6, eff. January 2, 2002; Volume 23, Issue 3, eff. December 1, 2006; Volume 31, Issue 15, eff. May 1, 2015.

18VAC15-20-80 to 18VAC15-20-90. [Repealed]

Historical Notes

Derived from VR137-01-02 §§ 3.6, 4.1, eff. September 1, 1994; amended, Virginia Register Volume 18, Issue 6, eff. January 2, 2002; repealed, Virginia Register Volume 23, Issue 3, eff. December 1, 2006.

18VAC15-20-100. [Repealed]

Historical Notes

Derived from VR137-01-02 § 4.2, eff. September 1, 1994; repealed, Virginia Register Volume 18, Issue 6, eff. January 2, 2002.

18VAC15-20-101 to 18VAC15-20-110. [Repealed]

Historical Notes
Derived from Virginia Register Volume 18, Issue 6, eff. January 2, 2002 or from VR137-01-02 § 5.1, eff. September 1, 1994; amended, Virginia Register Volume 18, Issue 6, eff. January 2, 2002; repealed, Virginia Register Volume 23, Issue 3, eff. December 1, 2006.

18VAC15-20-120 to 18VAC15-20-140. [Repealed]

Historical Notes
Derived from VR137-01-02 §§ 5.2 to 5.4, eff. September 1, 1994; repealed, Virginia Register Volume 18, Issue 6, eff. January 2, 2002.

18VAC15-20-150. [Repealed]

Historical Notes
Derived from VR137-01-02 § 5.5, eff. September 1, 1994; amended, Virginia Register Volume 18, Issue 6, eff. January 2, 2002; repealed, Virginia Register Volume 23, Issue 3, eff. December 1, 2006.

18VAC15-20-160 to 18VAC15-20-240. [Repealed]

Historical Notes
Derived from VR137-01-02 § 5.6, eff. September 1, 1994; repealed, Virginia Register Volume 18, Issue 6, eff. January 2, 2002.

18VAC15-20-250 to 18VAC15-20-251. [Repealed]

Historical Notes
Derived from VR137-01-02 § 8.1, eff. September 1, 1994; derived from or amended, Virginia Register Volume 18, Issue 6, eff. January 2, 2002; repealed, Virginia Register Volume 23, Issue 3, eff. December 1, 2006.

18VAC15-20-260. [Repealed]

Historical Notes
Derived from VR137-01-02 § 9.1, eff. September 1, 1994; repealed, Virginia Register Volume 18, Issue 6, eff. January 2, 2002.

18VAC15-20-270 to 18VAC15-20-271. [Repealed]

Historical Notes
Derived from VR137-01-02 § 9.2, eff. September 1, 1994; derived from or amended, Virginia Register Volume 18, Issue 6, eff. January 2, 2002; repealed, Virginia Register Volume 23, Issue 3, eff. December 1, 2006.

18VAC15-20-280. [Repealed]

Historical Notes
Derived from VR137-01-02 § 10.1, eff. September 1, 1994, repealed, Virginia Register Volume 18, Issue 6, eff. January 2, 2002.

18VAC15-20-290 to 18VAC15-20-291. [Repealed]

Historical Notes
Derived from VR137-01-02 § 10.2, eff. September 1, 1994; derived or amended, Virginia Register Volume 18, Issue 6, eff. January 2, 2002; repealed, Virginia Register Volume 23, Issue 3, eff. December 1, 2006.

18VAC15-20-300 to 18VAC15-20-320. [Repealed]

Historical Notes
Derived from VR137-01-02 §§ 11.1 to 11.3, eff. September 1, 1994; repealed, Virginia Register Volume 18, Issue 6, eff. January 2, 2002.

18VAC15-20-330 to 18VAC15-20-332. [Repealed]

Historical Notes
Derived from VR137-01-02 § 11.4, eff. September 1, 1994; derived from or amended, Virginia Register Volume 18, Issue 6, eff. January 2, 2002; repealed, Virginia Register Volume 23, Issue 3, eff. December 1, 2006.

18VAC15-20-340 to 18VAC15-20-360. [Repealed]

Historical Notes
Derived from VR137-01-02 §§ 12.1 to 12.3, eff. September 1, 1994; repealed, Virginia Register Volume 18, Issue 6, eff. January 2, 2002.

18VAC15-20-361. [Repealed]

Historical Notes
Derived from Virginia Register Volume 18, Issue 6, eff. January 2, 2002; repealed, Virginia Register Volume 23, Issue 3, eff. December 1, 2006.

18VAC15-20-370 to 18VAC15-20-390. [Repealed]

Historical Notes
Derived from VR137-01-02 §§ 12.4 to 12.6, eff. September 1, 1994; repealed, Virginia Register Volume 18, Issue 6, eff. January 2, 2002.

PART VI.

GENERAL STANDARDS OF PRACTICE AND CONDUCT

18VAC15-20-400. Responsibility to the public.

The primary obligation of the licensee is to the public. If the licensee's judgment is overruled under circumstances when the safety, health, property and welfare of the public are endangered, the licensee shall inform the employer or client of the possible consequences and notify appropriate authorities if the situation is not resolved. The licensee shall take such action only when his authority to correct a problem has been ignored or overruled.

Historical Notes
Derived from VR137-01-02 § 13.1, eff. September 1, 1994; amended, Virginia Register Volume 18, Issue 6, eff. January 2, 2002; Volume 23, Issue 3, eff. December 1, 2006.

18VAC15-20-410. Public statements.

A. The licensee shall be truthful in all matters relating to the performance of asbestos abatement or asbestos consulting services.

B. When serving as an expert or technical witness, the licensee shall express an opinion only when it is based on an adequate knowledge of the facts in issue and on a background of technical competence in the subject matter. Except when appearing as an expert witness in court or an administrative proceeding when the parties are represented by counsel, the licensee shall issue no statements, reports, criticisms, or arguments on matters relating to practices which are inspired or paid for by an interested party or parties, unless one has prefaced the comment by disclosing the identities of the party or parties on whose behalf the licensee is speaking, and by revealing any self-interest.

C. Licensees or applicants shall not knowingly make a materially false statement, submit falsified documents or fail to disclose a material fact requested in connection with an application submitted to the board by any individual or business entity for licensure or renewal.

Historical Notes
Derived from VR137-01-02 § 13.2, eff. September 1, 1994; amended, Virginia Register Volume 18, Issue 6, eff. January 2, 2002; Volume 23, Issue 3, eff. December 1, 2006.

18VAC15-20-420. Solicitation of work.

In the course of soliciting work:

1. The licensee shall not bribe.

2. The licensee shall not falsify or permit misrepresentation of the licensee's work or an associate's academic or professional qualifications, nor shall the licensee misrepresent the degree of responsibility for prior assignments.

3. Materials used in the solicitation of employment shall not misrepresent facts concerning employers, employees, associates, joint ventures or past accomplishments of any kind.

4. Materials used in the solicitation of services shall not misrepresent facts of approval, federal, or state requirements.

Historical Notes
Derived from VR137-01-02 § 13.3, eff. September 1, 1994; amended, Virginia Register Volume 18, Issue 6, eff. January 2, 2002; Volume 23, Issue 3, eff. December 1, 2006.

18VAC15-20-430. Professional responsibility.

A. The licensee or accredited asbestos training provider shall, upon request or demand, produce to the board, or any of its representatives, any plan, document, book, record or copy of it in his possession concerning a transaction covered by this chapter, and shall cooperate in the investigation of a complaint filed with the board against a licensee or accredited asbestos training provider.

B. A licensee or accredited asbestos training provider shall not use the design, plans or work of another licensee or accredited asbestos training provider without the original professional's knowledge and consent and after consent, a thorough review to the extent that full responsibility shall be assumed by the user.

C. Accredited asbestos training providers shall admit board representatives for the purpose of conducting an on-site audit, or any other purpose necessary to evaluate compliance with this chapter and other applicable laws and regulations.

Historical Notes
Derived from VR137-01-02 § 13.4, eff. September 1, 1994; amended, Virginia Register Volume 18, Issue 6, eff. January 2, 2002; Volume 23, Issue 3, eff. December 1, 2006.

18VAC15-20-440. Good standing in other jurisdictions.

A. Licensees, accredited asbestos training providers, training managers, or principal instructors who perform project monitoring, project design, inspections, management planning, asbestos abatement training, asbestos contracting or supervisor work in other jurisdictions shall be in good standing in every jurisdiction where licensed, certified, or approved and shall not have had a license, certification or approval suspended, revoked or surrendered in connection with a disciplinary action.

B. Licensees, accredited asbestos training providers, training managers, or principal instructors

shall notify the board in writing no later than 10 days after the final disciplinary action taken by another jurisdiction against their license or other approval to conduct asbestos abatement activities.

C. Licensees, accredited asbestos training providers, training managers, or principal instructors may be subject to disciplinary action or removal of an asbestos training program accreditation for disciplinary actions taken by another jurisdiction.

Historical Notes

Derived from VR137-01-02 § 13.5, eff. September 1, 1994; amended, Virginia Register Volume 18, Issue 6, eff. January 2, 2002; Volume 23, Issue 3, eff. December 1, 2006.

18VAC15-20-450. Grounds for disciplinary action.

A. The board shall have the authority to fine any licensee or accredited asbestos training program, accredited asbestos training provider or instructor, and to deny renewal, suspend, revoke or deny application for any license or approval as an accredited asbestos training program, accredited asbestos training provider or instructor provided for under Chapter 5 (§ 54.1-500 et seq.) of Title 54.1 of the Code of Virginia for:

1. Violating or inducing another person to violate any of the provisions of Chapter 1, 2, 3, or 5 of Title 54.1 of the Code of Virginia, or any of the provisions of this chapter.

2. Obtaining a license, approval as an accredited asbestos training program, approval as an accredited asbestos training provider or approval as an instructor through fraudulent means.

3. Altering or falsifying a Virginia Asbestos License or a training certificate from an accredited asbestos training program.

4. Violating any provision of AHERA or ASHARA, or any federal or state regulation pertinent to asbestos activity.

5. Having been found guilty by the board, an administrative body, or by a court of any misrepresentation in the course of performing his asbestos-related operating duties.

6. Subject to the provisions of § 54.1-204 of the Code of Virginia, having been convicted or found guilty, regardless of adjudication in any jurisdiction of the United States, of any felony or of any misdemeanor involving lying, cheating, or stealing, or of any violation while engaged in environmental remediation activity, which resulted in the significant harm or the imminent and substantial threat of significant harm to human health or the environment there being no appeal pending therefrom or the time for appeal having elapsed. Any plea of nolo contendere shall be considered a conviction for the purposes of this chapter. A certified copy of the

final order, decree or case decision by a court or regulatory agency with lawful authority to issue such order, decree or case decision shall be admissible as prima facie evidence of such conviction or discipline.

7. Failing to notify the board in writing within 30 days of pleading guilty or nolo contendere or being convicted or found guilty of any felony or of any misdemeanor involving lying, cheating, or stealing or of any violation while engaged in environmental remediation activity which resulted in the significant harm or the imminent and substantial threat of significant harm to human health or the environment.

8. Negligence, or a continued pattern of incompetence, in the practice of the discipline in which the asbestos license is held.

9. Failing or neglecting to send any information or documentation that was requested by the board or its representatives.

10. Refusing to allow state or federal representatives access to any area of an abatement site for the purpose of lawful compliance inspections.

11. Failing to notify the board in writing within 30 days after any change in address or name.

12. Acting as or being an ostensible licensee for undisclosed persons who do or will control or direct, directly or indirectly, the operations of the licensee's business.

Any unlawful act or violation of any provision of Chapter 5 (§ 54.1-500 et seq.) of Title 54.1 of the Code of Virginia or of the regulations of the board by any asbestos supervisor or asbestos worker may be cause for disciplinary action against the asbestos contractor for whom he works if it appears to the satisfaction of the board that the asbestos contractor knew or should have known of the unlawful act or violation.

B. Any individual or firm whose license, approval as an accredited asbestos training program, or approval as an accredited asbestos training provider is revoked under this section shall not be eligible to reapply for a period of one year from the effective date of the final order of revocation. The individual or firm shall meet all education, experience and training requirements, complete the application and submit the required fee for consideration as a new applicant.

Historical Notes

Derived from VR137-01-02 § 13.6, eff. September 1, 1994; amended, Virginia Register Volume 18, Issue 6, eff. January 2, 2002; Volume 23, Issue 3, eff. December 1, 2006.

PART VII.

STANDARDS OF PRACTICE AND CONDUCT FOR ASBESTOS CONTRACTORS

18VAC15-20-451. Asbestos contractor responsibilities.

A. Licensed asbestos contractors shall comply with all requirements, procedures, standards and regulations covering any part of an asbestos project established by the U.S. Environmental Protection Agency, the U.S. Occupational Safety and Health Administration, the Virginia Department of Labor and Industry, and the Divisions of Air Pollution and Waste Management of the Department of Environmental Quality (§ 54.1-517 of the Code of Virginia).

B. Licensed asbestos contractors shall comply with the requirements found in § 54.1-1100 of the Code of Virginia governing the regulation of general contractors.

C. A licensed asbestos contractor shall employ only licensed asbestos supervisors and workers to perform work on any asbestos project.

D. A licensed asbestos contractor shall ensure that a licensed asbestos supervisor is present at each job site while an asbestos project is in progress.

E. Prior to the start of any asbestos project, the licensed asbestos contractor shall:

1. Notify the building or property owner or agent of the owner that a licensed project monitor is required in accordance with the provisions of 18VAC15-20-455.1 and 18VAC15-20-456 to determine that proper work practices are used and compliance with all asbestos laws and regulations is maintained, to collect environmental air samples during the asbestos project, to perform visual inspections of the work area, and to grant final clearance upon completion of the asbestos project.

2. Obtain a written acknowledgment from the owner or agent of the owner that the owner or agent of the owner has been notified of the requirement to secure the services of a licensed asbestos project monitor. Such acknowledgment must include the address of the building where the asbestos project is to take place; the date the work is to be performed; the name, address, and license number of the licensed asbestos contractor performing the work; and evidence that the building or property owner or agent of the owner has received the notification. The initial notification and acknowledgment shall be sufficient for the term of multiple-project service contracts.

3. Conflict of interest situations and relationships between asbestos contractors and asbestos project monitors are set forth in subdivision 2 of 18VAC15-20-453.

Historical Notes
Derived from Virginia Register Volume 18, Issue 6, eff. January 2, 2002; amended, Virginia Register Volume 23, Issue 3, eff. December 1, 2006; Volume 24, Issue 17, eff. August 1, 2008.

18VAC15-20-452. Maintenance of licensing and training records at the asbestos job site.

A. The asbestos contractor shall be responsible for maintaining at each job site a list of each licensed worker and supervisor, or copy of the licenses of each asbestos worker and supervisor. This list shall include the current license numbers and the license expiration dates of those workers and supervisors. This section does not relieve the contractor of any specific AHERA and ASHARA requirements concerning training certificates.

B. A licensed asbestos contractor shall maintain a copy of its Virginia asbestos contractor license on each job site.

C. Records maintained at the job site shall be available for review by the Department of Labor and Industry, the Department of Professional and Occupational Regulation, and all other agencies having authorization to inspect an asbestos job site.

Historical Notes
Derived from Virginia Register Volume 18, Issue 6, eff. January 2, 2002.

18VAC15-20-453. Conflict of interest.

The following situations and relationships between license categories are deemed to represent a conflict of interest and are prohibited.

1. It is a conflict of interest and a violation of this chapter for an asbestos contractor to have an employee/employer relationship with, or financial interest in, a laboratory utilized by the contractor for asbestos sample analysis. Laboratories owned by the building owner performing analysis on suspect asbestos samples taken from the building owners' property are exempt from this section.

2. It is a conflict of interest and a violation of this chapter for an asbestos contractor to have an employee/employer relationship with an asbestos project monitor working on an asbestos project performed by that asbestos contractor. An asbestos contractor shall not have any financial interests in the firm of which a project monitor is an employee and provides project monitoring services for that contractor. This section does not relieve a contractor of the OSHA personal monitoring requirements set forth in 29 CFR 1926.1101.

3. It is a conflict of interest and a violation of this chapter for an asbestos contractor to enter into a contract to perform an asbestos project if the asbestos inspection or

project design was performed by individuals with an employer/employee relationship with, or financial interest in, the asbestos contractor, unless the asbestos

contractor provides the building owner with the Virginia Asbestos Licensing Consumer Information Sheet and the Virginia Asbestos Licensing Inspector/Project Designer/Contractor Disclosure Form as prescribed by the department. The asbestos contractor's relationship with the asbestos inspector or project designer on the project shall be disclosed. The disclosure form shall be signed and dated by the licensed contractor and submitted as part of the bid. The disclosure form shall be kept on the asbestos project site and available for review.

Historical Notes

Derived from Virginia Register Volume 18, Issue 6, eff. January 2, 2002; amended, Virginia Register Volume 23, Issue 3, eff. December 1, 2006.

18VAC15-20-454. Transfer of asbestos contractor license.

Asbestos contractor licenses are issued to firms as defined in this chapter and are not transferable. Whenever the legal firm holding the license is dissolved or altered to form a new firm, the original license becomes void and shall be returned to the board within 30 days of the change. Additionally, the new firm shall apply for a new license, on a form provided by the board, within 30 days of the change in the firm. Such changes include:

1. Death of a sole proprietor;

2. Death or withdrawal of a general partner in a general partnership or the managing partner in a limited partnership;

3. Termination or cancellation of a corporation or limited liability company; and

4. Conversion, formation, or dissolution of a corporation, a limited liability company, or an association or any other firm recognized under the laws of the Commonwealth of Virginia.

Historical Notes

Derived from Virginia Register Volume 18, Issue 6, eff. January 2, 2002; amended Volume 35, Issue 20, eff. September 1, 2019.

PART VIII.

STANDARDS OF PRACTICE AND CONDUCT FOR ASBESTOS PROJECT MONITORS

18VAC15-20-455. Duties and functions.

The duties and functions of a project monitor include, but are not limited to, observing and monitoring the activities of an asbestos abatement contractor on asbestos projects to determine that proper work practices are used and compliance with all asbestos laws and regulations is maintained, collecting environmental air samples during the asbestos project, performing visual inspections of the work area and granting final clearance upon completion of the asbestos project.

Historical Notes
Derived from Virginia Register Volume 18, Issue 6, eff. January 2, 2002.

18VAC15-20-455.1. Abatement projects that require a project monitor.

A project monitor is required on:

1. Asbestos projects performed in buildings that are occupied or intended to be occupied upon completion of the asbestos project exceeding 260 linear feet or 160 square feet or 35 cubic feet of asbestos-containing material; or

2. Whenever the building or property owner deems it necessary to monitor asbestos projects.

Historical Notes
Derived from Virginia Register Volume 18, Issue 6, eff. January 2, 2002.

18VAC15-20-456. Responsibilities.

A. Asbestos project monitors shall conduct inspections of the contractor's work practices and inspections of the containment.

B. Asbestos project monitors shall be present on the job site each day response actions are being conducted or in accordance with the owner-approved contractual agreement with the project monitor, shall perform the duties and functions established in 18VAC15-20-455, and shall maintain a daily log of all work performed. The daily log shall include inspection reports, air sampling data, type of work performed by the contractor, problems encountered and corrective action taken.

C. Asbestos project monitors shall take final air samples on all abatement projects, except for abatement projects in residential buildings.

D. The asbestos project monitor shall include, prior to reoccupancy, the air sample report on

the employing asbestos analytical laboratory's letterhead in the final clearance report. Such report shall include the licensed asbestos project monitor's signature.

Historical Notes
Derived from Virginia Register Volume 18, Issue 6, eff. January 2, 2002; amended, Virginia Register Volume 23, Issue 3, eff. December 1, 2006; Volume 35, Issue 20, eff. September 1, 2019.

18VAC15-20-456.1. Onsite analysis by project monitors.

Project monitors who analyze PCM air samples on site shall (i) be employed by a licensed asbestos analytical laboratory, (ii) have completed the NIOSH 582 or NIOSH 582 Equivalency Course, and (iii) satisfy one of the following:

1. The project monitor is listed in the AAR and rated "acceptable" for the most recent AAT round;

2. The licensed asbestos analytical laboratory employing the project monitor is rated as "proficient" in the IHPAT Program and maintains training and quality control documentation necessary to demonstrate competency in performing onsite analysis; or

3. The licensed asbestos analytical laboratory employing the project monitor is accredited under the IHLAP, remains in compliance with accreditation requirements, and maintains training and quality control documentation necessary to demonstrate competency in performing onsite analysis.

Historical Notes
Derived from Virginia Register Volume 35, Issue 20, eff. September 1, 2019.

PART IX.

STANDARDS OF PRACTICE AND CONDUCT FOR ASBESTOS PROJECT DESIGNERS

18VAC15-20-457. Duties and functions.

The duties and functions of a project designer include, but are not limited to, preparing an asbestos abatement project design, specifications for asbestos abatement projects and addenda to abatement specifications.

Historical Notes
Derived from Virginia Register Volume 18, Issue 6, eff. January 2, 2002.

18VAC15-20-458. Responsibilities.

The project design shall include, but is not limited to:

1. Scope of work.

2. Order of work.

3. Work methods and practices to be used.

4. Number and type of final air samples to be taken.

Historical Notes
Derived from Virginia Register Volume 18, Issue 6, eff. January 2, 2002.

PART X.

STANDARDS OF PRACTICE AND CONDUCT FOR ASBESTOS INSPECTORS AND MANAGEMENT PLANNERS

18VAC15-20-459. Duties and functions.

A. The duties and functions of an asbestos inspector include, but are not limited to, determining the presence and location of friable and nonfriable ACM, determining the condition of ACM, and sampling suspect ACM.

B. The duties and functions of an asbestos management planner include, but are not limited to, preparing management plans to effectively manage ACM that will remain in the building.

Historical Notes
Derived from Virginia Register Volume 18, Issue 6, eff. January 2, 2002.

18VAC15-20-459.1. Responsibilities.

A. Asbestos inspectors shall conduct all asbestos inspections in accordance with 40 CFR 763.86.

B. Asbestos inspectors shall prepare a written inspection report following an asbestos inspection. The report shall contain, but is not limited to:

1. Inspector's name and license number.

2. Location of all samples taken.

3. Location and type of all ACM and assumed ACM.

4. Assessment of all ACM and assumed ACM.

5. Copy of the laboratory report.

C. Asbestos management planners shall prepare all management plans in accordance with 40 CFR 763.88.

Historical Notes
Derived from Virginia Register Volume 18, Issue 6, eff. January 2, 2002.

PART XI.

STANDARDS OF PRACTICE AND CONDUCT FOR ASBESTOS ANALYTICAL LABORATORIES

18VAC15-20-459.2. General.

Asbestos analytical laboratories shall comply with all requirements, procedures, standards and regulations covering all aspects of asbestos analytical services as established by this chapter.

Historical Notes
Derived from Virginia Register Volume 18, Issue 6, eff. January 2, 2002.

18VAC15-20-459.3. Responsibilities.

A. Each asbestos analytical laboratory using PLM to analyze bulk suspect material for the presence of asbestos shall analyze the material in accordance with EPA 600/R-93/116 Method of Determination of Bulk Asbestos or the NIOSH method 9002.

B. Each asbestos analytical laboratory using PCM to analyze air samples for the presence of airborne fibers shall use the method outlined in Appendix A of OSHA's 1926.1101 regulation or shall use the most recent version of NIOSH's 7400 method.

C. Each asbestos analytical laboratory using TEM to analyze air samples for the presence of airborne asbestos fibers shall use the method outlined in Appendix A to Subpart E of 40 CFR Part 763 or shall use the most recent version of NIOSH's 7402 method.

Historical Notes
Derived from Virginia Register Volume 18, Issue 6, eff. January 2, 2002.

18VAC15-20-459.4. Change of status.

A. The licensee shall notify the department within 10 days of any changes to the resident responsible individual for each laboratory location.

B. The licensee shall notify the board within 10 business days upon the loss of accreditation or proficiency rating by NVLAP, IHLAP, or IHPAT by any laboratory location. The asbestos analytical laboratory shall notify the board if an employed analyst or project monitor performing asbestos laboratory analysis is removed from the AAR.

C. The licensee shall notify the board, in writing, if the type of analysis it will undertake is different from the type of analysis for which the initial license was issued. The licensee shall submit a new application or branch office application, as applicable, reflecting the changes and submit evidence of meeting the qualifications required by this chapter to perform the analysis. The licensee must receive approval from the board prior to performing the analysis. No additional fees are required to amend type of analysis

performed by the analytical laboratory licensee.

D. The licensee shall notify the department within 10 days of any changes in the laboratory location.

E. Asbestos analytical laboratory licenses are issued to firms as defined in this chapter and are not transferable. Whenever the legal firm holding the license is dissolved or altered to form a new firm, the original license becomes void and shall be returned to the board within 30 days of the change. Additionally, the new firm shall apply for a new license, on a form provided by the board, within 30 days of the change in the firm. Such changes include:

1. Death of a sole proprietor;

2. Death or withdrawal of a general partner in a general partnership or the managing partner in a limited partnership;

3. Termination or cancellation of a corporation or limited liability company; and

4. Conversion, formation, or dissolution of a corporation, a limited liability company, or an association or any other firm recognized under the laws of the Commonwealth of Virginia.

Historical Notes

Derived from Virginia Register Volume 18, Issue 6, eff. January 2, 2002; amended Volume 35, Issue 20, eff. September 1, 2019.

18VAC15-20-459.5. License.

A. The transfer of an asbestos analytical laboratory license is prohibited. Whenever there is any change in the controlling interest of the legal entity licensed, a new license is required.

B. A copy of the current asbestos analytical laboratory license will be on site at all times where analysis is performed, including project sites. The license shall be available for review by the department.

C. The board shall require asbestos analytical laboratories that wish to become or to remain licensed in the Commonwealth to conform to any future additional standards or regulations set forth by the EPA or accrediting entity.

D. The licensee shall permit the board to conduct periodic on-site inspections and evaluations of licensed asbestos analytical laboratory facilities. The inspections shall include, but not be limited to, equipment, procedure and protocol records, training and accreditation documentation and any other program evaluation results on file. Prior notice of such inspections is not required.

Historical Notes

Derived from Virginia Register Volume 18, Issue 6, eff. January 2, 2002.

18VAC15-20-459.6 to 18VAC15-20-459.15. [Repealed]

Historical Notes
Derived from Virginia Register Volume 18, Issue 6, eff. January 2, 2002; repealed, Virginia Register Volume 23, Issue 3, eff. December 1, 2006.

18VAC15-20-460. [Repealed]

Historical Notes
Derived from VR137-01-02 § 14.1, eff. September 1, 1994; amended, Virginia Register Volume 18, Issue 6, eff. January 2, 2002; repealed, Virginia Register Volume 23, Issue 3, eff. December 1, 2006.

PART XII.

ACCREDITED ASBESTOS TRAINING PROGRAM STANDARDS OF PRACTICE AND CONDUCT

18VAC15-20-461. Changes to an approved accredited asbestos training program.

Once an accredited asbestos training program has been approved, prior to the continuation of the accredited asbestos training program, substantial changes in the information required by subdivisions 1 through 5 of this section shall be submitted to the board for review and approval. The board will state its approval or disapproval of the changes by mail.

1. Training program curriculum.

2. Training program examination.

3. Training program materials.

4. Principal instructors.

5. Certificate of completion.

Historical Notes
Derived from Virginia Register Volume 23, Issue 3, eff. December 1, 2006.

18VAC15-20-462. Transfer of approval of an accredited asbestos training program.

The transfer of the approval of an accredited asbestos training program will require a review by the following procedure:

1. The applicant for transfer shall submit an application to the department and materials for review to determine if substantial changes have been made to the program. All submissions shall be in accordance with subsections A, B and C of 18VAC15-20-34.

2. Receipt of applications and deposit of fees submitted does not indicate approval of the transfer.

3. A review of the submitted materials shall be performed to determine if substantial changes have been made. A substantial change is defined as a change in training program materials, curriculum, principal instructors or facilities at the time of transfer of the accredited asbestos training program. A complete field audit may be conducted of any applicant believed to have made a substantial change.

Historical Notes
Derived from Virginia Register Volume 23, Issue 3, eff. December 1, 2006.

18VAC15-20-463. Access by the department.

Accredited asbestos training providers shall permit department representatives to attend, evaluate, and monitor any accredited asbestos training program. Prior notice of attendance by agency representatives is not required. All records are required to be available for review by department representatives. Records required to be maintained by the training provider shall be maintained at the physical location of the accredited asbestos training provider.

Historical Notes
Derived from Virginia Register Volume 23, Issue 3, eff. December 1, 2006.

18VAC15-20-464. Withdrawal of approval of an accredited asbestos training program.

A. The board may withdraw approval of any accredited asbestos training program for the following reasons:

1. The school, instructors, or training programs no longer meet the standards established in this chapter.

2. The board determines that the provider is not conducting the training in a manner that meets the requirements as set forth in this chapter.

3. Suspension or revocation of training approval in another state or by the EPA.

B. Decisions regarding withdrawal of approval shall be made by the board under the provisions of the Virginia Administrative Process Act (§ 2.2-4000 et seq. of the Code of Virginia).

Historical Notes
Derived from Virginia Register Volume 23, Issue 3, eff. December 1, 2006.

18VAC15-20-470. Recordkeeping and provision of records to the board.

A. The training manager shall notify the board no less than 48 hours prior to the start date of any accredited asbestos training program.

B. The training manager shall provide an updated notification when an accredited asbestos training program will begin on a date other than the start date specified in the original notification as follows:

1. For accredited asbestos training programs beginning prior to the start date provided to the board, an updated notification must be received by the board at least 48 hours before the new start date.

2. For accredited asbestos training programs beginning after the start date

provided to the board, an updated notification must be received by the board at least 48 hours before the start date provided to the board.

C. The training manager shall update the board of any change in location of an accredited asbestos training program at least 48 hours prior to the start date provided to the board.

D. The training manager shall update the board regarding any accredited asbestos training program cancellations or any other change to the original notification at least 48 hours prior to the start date provided to the board. This requirement shall not apply to situations or circumstances beyond the control of the training provider.

E. Each notification, including updates, shall include the following:

1. Notification type (original, update, cancellation).

2. Training program name, Virginia accreditation number, address, and telephone number.

3. Course discipline, type (initial/refresher), and the language in which the instruction will be given.

4. Dates and times of training.

5. Training locations, telephone number, and address.

6. Principal instructor's name.

7. Training manager's name and signature.

F. For all accredited asbestos training programs approved by the board, the training provider shall keep a training program participant list of all of the individuals attending the accredited asbestos training program. The training program participant list shall contain the following minimum information:

1. Training program name, Virginia accreditation number, address, and telephone number.

2. Course discipline and type (initial/refresher).

3. Dates of training.

4. Location of training program presentation.

5. Each participant's name, address, social security number, course completion certificate number, and course test score.

6. Principal instructor's name.

7. Training manager's name and signature.

G. The training program participant list shall be completed by the training program principal instructor and training program participants daily.

H. The training program participant list shall be retained by the training provider for three years following the date of completion of the training program.

I. The training manager shall provide to the board the accredited asbestos training program participant list no later than 10 business days following the training program completion.

J. Notifications and training program participant lists shall be submitted electronically in the manner established by the board specifically to receive this documentation using a sample form designed by and available from the board. Any variation upon this procedure shall be approved by the board prior to submission.

K. The training provider shall retain all examinations completed by training program participants for a period of three years.

L. The department shall not recognize training certificates from approved training providers that fail to notify or fail to provide a training program participant list.

Historical Notes

Derived from VR137-01-02 § 14.2, eff. September 1, 1994; amended, Virginia Register Volume 18, Issue 6, eff. January 2, 2002; Volume 23, Issue 3, eff. December 1, 2006; Volume 31, Issue 15, eff. May 1, 2015.

18VAC15-20-480. Accredited asbestos training program outline and syllabus.

A. Prior to the start of the accredited asbestos training program, the training provider shall prepare a course outline or syllabus. The outline shall contain the following minimum information:

1. Training program title and length of training;

2. Starting time of each day of training;

3. Training program section, inclusive length of training time for each section and instructor for each program section;

4. Scheduled breaks and inclusive length of breaks;

5. Scheduled lunch break and inclusive length of break;

6. Scheduled hands-on training, a description of the training to be performed, length of training and name of the instructor or instructors; and

7. Examination and inclusive length of examination time.

B. The training provider shall disseminate the training program outline or syllabus to all training program participants. A copy of the training program outline shall be retained by the training provider for a period of three years following the completion of the training program.

Historical Notes
Derived from VR137-01-02 § 14.3, eff. September 1, 1994; amended, Virginia Register Volume 18, Issue 6, eff. January 2, 2002.

18VAC15-20-490. Certificates of completion.

A. Following attendance of the accredited asbestos training program and successful completion of an examination by the training program participant, the training provider shall issue a Certificate of Completion to the training program participant. The certificate shall contain the following minimum information:

1. Training provider's business name;

2. Training provider's business address and phone number;

3. Location of training;

4. Typewritten or printed name of training program participant;

5. Training program title and length of training in hours;

6. Certificate number;

7. Inclusive training program dates;

8. Examination date;

9. An expiration date one year after the date of completion of the accredited asbestos training program;

10. For training programs covered under 40 CFR Part 763, Subpart E, Appendix C, a statement that the person receiving the certificate has completed the requisite training for asbestos accreditation under TSCA Title II;

11. Statement of attendance and successful completion of an examination by the training program participant; and

12. Signature and typewritten or printed name of the accredited asbestos training program manager or administrator and principal instructor. The signature may be a printed facsimile.

B. Changes to the Certificate of Completion shall be submitted to the board for review and approval prior to issuance to training program participants.

Historical Notes
Derived from VR137-01-02 § 14.4, eff. September 1, 1994; amended, Virginia Register Volume 18, Issue 6, eff. January 2, 2002.

18VAC15-20-500. Training program materials: training program manuals; video instruction; training equipment.

A. All training program participants shall be issued a training program manual for the asbestos training program.

B. Use of video instruction is permitted as a method of instruction in an accredited asbestos training program, provided that videos are not the sole and primary source of instruction unless the videos are interactive.

Videos shall be made available to the board, if requested, during an on-site audit or inspection.

C. In no case will equipment utilized for display or part of hands-on training have been utilized on an asbestos abatement project site. Equipment will be dedicated for training use only. The training provider shall keep a listing of all equipment utilized for training on file. The equipment list will contain the following minimum information:

1. Equipment brand name;

2. Equipment description; and

3. A statement of how the equipment is to be utilized in the accredited asbestos training program.

The dated equipment list will be updated as new equipment is added as part of an accredited asbestos training program and each list must be maintained for a period of three years.

Historical Notes
Derived from VR137-01-02 § 14.5, eff. September 1, 1994; amended, Virginia Register Volume 18, Issue 6, eff. January 2, 2002.

18VAC15-20-510. [Repealed]

Historical Notes
Derived from VR137-01-02 § 14.6, eff. September 1, 1994; repealed, Virginia Register Volume 18, Issue 6, eff. January 2, 2002.

18VAC15-20-511. Instructor qualifications.

A. An approved accredited asbestos training program shall employ a training manager who:

1. Has a minimum of two years experience in teaching adults; or

2. Has a minimum of three years experience in the asbestos abatement industry.

B. An approved accredited asbestos training program shall use principal instructors who:

1. Have a minimum of 24 hours of asbestos specific training; and

2. Have a minimum of two years experience in the asbestos abatement industry, or have a minimum of two years' experience in teaching adults.

C. Documentation of all instructor qualifications shall be reviewed and approved by the board prior to the instructor teaching in an accredited asbestos training program.

D. Guest instructors are exempt from instructor qualifications and are limited to no more than two hours of training per day.

Historical Notes
Derived from Virginia Register Volume 18, Issue 6, eff. January 2, 2002.

18VAC15-20-520. Number of instructors required to provide training.

A. The board strongly recommends a minimum of two instructors to teach an accredited asbestos initial worker training program.

B. One instructor is adequate per accredited asbestos refresher training program.

C. At least one instructor shall be in the classroom and available to the students at all times during the accredited asbestos training program.

Historical Notes
Derived from VR137-01-02 § 14.7, eff. September 1, 1994; amended, Virginia Register Volume 18, Issue 6, eff. January 2, 2002; Volume 31, Issue 15, eff. May 1, 2015.

18VAC15-20-530. Student to instructor ratios.

A. Hands-on training means an evaluation that tests the trainee's ability to satisfactorily perform the work practices and procedures in this chapter and shall be overseen by the instructor at a ratio of no more than 10 students to one instructor.

B. There shall be no more than three training program participants in any hands-on exercise, except for a hands-on exercise which involves building containments.

Historical Notes
Derived from VR137-01-02 § 14.8, eff. September 1, 1994; amended, Virginia Register Volume 18, Issue 6, eff. January 2, 2002.

18VAC15-20-540. Distinct training disciplines.

All initial and refresher accredited asbestos training programs shall be discipline specific.

Historical Notes
Derived from VR137-01-02 § 14.9, eff. September 1, 1994; amended, Virginia Register Volume 18, Issue 6, eff. January 2, 2002.

18VAC15-20-550. Completion of training.

The total hours of actual training for an initial training program, including examinations, shall be completed within a single two-week time frame, from start to finish.

Historical Notes
Derived from VR137-01-02 § 14.10, eff. September 1, 1994; amended, Virginia Register Volume 18, Issue 6, eff. January 2, 2002.

18VAC15-20-560. Length of training.

The following are the requirements for length of training for an accredited asbestos training program:

1. In no case shall actual asbestos training exceed eight hours in a 24-hour period;

2. Training given during evening hours (after 5 p.m. and before 8 a.m.) may not exceed four hours, except training that is conducted during the student's second or third shift of working hours; and

3. Training performed on weekends (Friday after 5 p.m. to Monday 8 a.m.) may not exceed 16 hours.

Historical Notes
Derived from VR137-01-02 § 14.11, eff. September 1, 1994; amended, Virginia Register Volume 18, Issue 6, eff. January 2, 2002.

18VAC15-20-570. Non-English speaking accredited asbestos training programs.

All accredited asbestos training programs shall be taught in English. Accredited asbestos worker training programs are exempt from this section.

Historical Notes
Derived from VR137-01-02 § 14.12, eff. September 1, 1994; amended, Virginia Register Volume 18, Issue 6, eff. January 2, 2002.

18VAC15-20-580. Examinations.

A. All accredited asbestos training programs shall contain an examination following the instructional portion of the accredited asbestos training program. This requirement shall apply to all accredited asbestos training programs regardless of training program location.

B. Oral examinations, except for workers, are not permitted in an accredited asbestos training program. Trainers who provide worker oral examinations shall issue an answer sheet to be marked by the student. The student shall sign the answer sheet and it shall become a part of the training provider's required recordkeeping.

C. Examinations in languages other than English are only permitted in accredited asbestos worker training programs.

D. Examinations shall be given in the language of the accredited asbestos training program's instruction.

E. Reexamination following unsuccessful completion of the examination is permitted. The reexamination shall be limited to one attempt to pass following the initial examination. If the participant fails to achieve a 70% passing score after the second attempt, the participant shall retake the accredited asbestos training program before he is permitted to take a retest. The training provider shall retain the examinations completed by the accredited asbestos training program participant in compliance with the recordkeeping requirements of this chapter.

Historical Notes
Derived from VR137-01-02 § 14.13, eff. September 1, 1994; amended, Virginia Register Volume 18, Issue 6, eff. January 2, 2002.

18VAC15-20-590. Change of address, phone number or contact person.

Providers of accredited asbestos training programs are required to notify the board in writing of changes of address, phone number or principal instructor within 30 business days after changes to any of these items.

Historical Notes

Derived from VR137-01-02 § 14.14, eff. September 1, 1994; amended, Virginia Register Volume 18, Issue 6, eff. January 2, 2002.

18VAC15-20-600. Termination of training.

When a training provider ceases to conduct any of its training programs, it shall notify the board in writing and give the board the opportunity to take possession of the provider's asbestos training records relating to such programs.

Historical Notes
Derived from VR137-01-02 § 14.15, eff. September 1, 1994; amended, Virginia Register Volume 18, Issue 6, eff. January 2, 2002.

18VAC15-20-610. EPA ASHARA compliance.

All Virginia-approved accredited asbestos training programs shall be in compliance with all training and recordkeeping requirements established by the EPA Model Accreditation Plan, 40 CFR Part 763, Subpart E.

Historical Notes
Derived from VR137-01-02 § 14.16, eff. September 1, 1994; amended, Virginia Register Volume 18, Issue 6, eff. January 2, 2002.

18VAC15-20-620 to 18VAC15-20-690. [Repealed]

Historical Notes
Derived from VR137-01-02 §§ 15.1 to 15.8, eff. September 1, 1994; repealed, Virginia Register Volume 18, Issue 6, eff. January 2, 2002.

PART XIII.

ACCREDITED ASBESTOS TRAINING PROGRAM STANDARDS

18VAC15-20-700. General.

In all of the following accredited asbestos training program (training program) requirements, one day shall be equal to eight hours, inclusive of lunch and breaks.

Historical Notes
Derived from VR137-01-02 § 16.1, eff. September 1, 1994; amended, Virginia Register Volume 18, Issue 6, eff. January 2, 2002.

18VAC15-20-710. Worker training.

Asbestos abatement workers shall complete at least a four-day (32 hours) training program as outlined below. All training programs shall be approved by the board. The accredited asbestos training program shall include lectures, demonstrations, at least 14 hours of hands-on training, a training program review, and an examination. The training shall address the following topics:

1. Physical characteristics of asbestos.
    a. Identification of asbestos.
    b. Aerodynamic characteristics.
    c. Typical uses and physical appearance.
    d. A summary of abatement control options.
2. Potential health effects related to asbestos exposure.
    a. The nature of asbestos-related diseases.
    b. Routes of exposure, dose-response relationships and the lack of a safe exposure level.
    c. Synergism between cigarette smoking and asbestos exposure.
    d. Latency period for disease.
3. Employee personal protective equipment.
    a. Classes and characteristics of respirator types.

b. Limitations of respirators and their proper selection, inspection, donning, use, maintenance, and storage procedures.

c. Methods for field testing of the facepiece-to-face seal (positive and negative pressure fitting tests).

d. Qualitative and quantitative fit testing procedures.

e. Variability between field and laboratory protection factors. f.

Factors that alter respirator fit (e.g., facial hair).

g. The components of a proper respiratory protection program.

h. Selection and use of personal protective clothing; use, storage, and handling of nondisposable clothing.

i. Regulations covering personal protective equipment.

4. State-of-the-art work practices.

a. Asbestos abatement activities including descriptions of construction and maintenance of barriers and decontamination enclosure systems.

b. Positioning of warning signs.

c. Electrical and ventilation system lock-out.

d. Working techniques for minimizing fiber release, use of wet methods, use of negative pressure ventilation equipment, use of high efficiency particulate air (HEPA) vacuums.

e. Clean-up and disposal procedures.

f. Work practices for removal, encapsulation, enclosure, and repair.

g. Emergency procedures for sudden releases.

h. Potential exposure situations, and transport and disposal procedures.

i. Recommended and prohibited work practices.

5. Personal hygiene.

a. 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.

b. Potential exposures, including family exposure.

6. Additional safety hazards.

a. 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.

b. Scaffold and ladder hazards.

c. Slips, trips and falls.

d. Confined spaces.

7. Medical monitoring.

a. OSHA requirements for a pulmonary function test.

b. Chest X-rays and a medical history for each employee.

8. Air monitoring.

a. Procedures to determine airborne concentrations of asbestos fibers.

b. 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 and Department of Transportation regulations (49 CFR 172 Subpart H), with emphasis on packaging requirements and marking of containers of ACM waste.

10. Establishment of respiratory protection programs.

11. Training program review. A review of key aspects of the accredited asbestos training program.

Historical Notes

Derived from VR137-01-02 § 16.2, eff. September 1, 1994; amended, Virginia Register Volume 18, Issue 6, eff. January 2, 2002.

18VAC15-20-720. Examinations: Asbestos abatement worker.

Upon completion of an approved initial training program, a closed-book examination will be administered. Demonstration testing will also be permitted as part of the examination. Each examination shall cover the topics included in the training program. Persons who pass the examination and fulfill the training program requirements will receive a Certificate of Completion as specified in this chapter. The following are the requirements for an examination:

1. Fifty multiple choice questions; and

2. Passing score: 70% correct.

Historical Notes

Derived from VR137-01-02 § 16.3, eff. September 1, 1994; amended, Virginia Register Volume 18, Issue 6, eff. January 2, 2002.

18VAC15-20-730. Refresher training program.

A. Accredited asbestos refresher training programs shall be one day (eight hours) for asbestos abatement workers. The training programs shall review federal and state regulations, discuss changes to the regulations, if applicable, and developments in state-of-the-art procedures. A review of the following topics from the initial accredited asbestos training program shall be included in the accredited asbestos worker refresher training program:

1. Potential health effects related to asbestos exposure;

2. Employee personal protective equipment;

3. State-of-the-art work practices (with emphasis on work practices for removal, encapsulation, encasement, enclosure and repair and proper working techniques for minimizing fiber release, use of wet methods, use of negative pressure ventilation equipment and the use of high efficiency particulate air (HEPA) vacuums);

4. Personal hygiene; and

5. Additional safety hazards.

B. A written closed-book examination shall be included in the refresher training program. The examination will consist of no fewer than 50 questions. The passing score will be 70% correct. Persons who pass the examination and fulfill the training program requirements will receive a Certificate of Completion as specified in this chapter.

Historical Notes

Derived from VR137-01-02 § 16.4, eff. September 1, 1994; amended, Virginia Register Volume 18, Issue 6, eff. January 2, 2002.

18VAC15-20-740. Supervisor training.

Asbestos abatement supervisors shall complete a five-day (40 hours) training program as outlined below. The training program shall include lectures, demonstrations, training program review, examination, and at least 14 hours of hands-on training which allows supervisors the experience of performing actual tasks associated with asbestos abatement. The accredited asbestos supervisor training program shall address the following topics:

1. The role of the supervisor in the asbestos abatement process.

2. The physical characteristics of asbestos and asbestos-containing materials.

   a. Identification of asbestos.

   b. Aerodynamic characteristics.

   c. Typical uses, physical appearance.

   d. A review of hazard assessment considerations.

   e. A summary of abatement control options.

3. Potential health effects related to asbestos exposure.

   a. The nature of asbestos-related diseases.

   b. Routes of exposure, dose-response relationships and the lack of a safe exposure level.

   c. Synergism between cigarette smoking and asbestos exposure.

   d. Latency period for disease.

4. Employee personal protective equipment.

   a. Classes and characteristics of respirator types.

   b. Limitations of respirators and their proper selection, inspection, donning, use, maintenance and storage procedures.

   c. Methods for field testing of the facepiece-to-face seal (positive and negative pressure fitting tests).

   d. Qualitative and quantitative fit testing procedures.

e. Variability between field and laboratory protection factors.

f. Factors that alter respirator fit (e.g., facial hair, dental work, weight loss or gain).

g. The components of a proper respiratory protection program.

h. Selection and use of personal protective clothing; use, storage and handling of nondisposable clothing.

i. Regulations covering personal protective equipment.

5. State-of-the-art work practices.

a. Work practices for asbestos abatement activities including descriptions of proper construction and maintenance of barriers and decontamination enclosure systems.

b. Positioning of warning signs.

c. Electrical and ventilation system lock-out.

d. Working techniques for minimizing fiber release, use of wet methods, use of negative pressure ventilation equipment, and use of high efficiency particulate air (HEPA) vacuums.

e. Clean-up and disposal procedures.

f. Work practices for removal, encapsulation, encasement, enclosure and repair.

g. Emergency procedures for sudden releases.

h. Potential exposure situations.

i. Transport and disposal procedures.

j. Recommended and prohibited work practices.

k. Discussion of new abatement related techniques and methodologies.

6. Personal hygiene.

a. 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.

b. Potential exposures, such as family exposure, shall also be included.

7. Additional safety hazards.

a. 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.

b. Scaffold and ladder hazards.

c. Slips, trips and falls.

d. Confined spaces.

8. Medical monitoring. OSHA requirements for a pulmonary function test, chest X- rays and a medical history for each employee.

9. Air monitoring.

a. Procedures to determine airborne concentration of asbestos fibers, including a description of aggressive sampling, sampling equipment and methods.

b. Reasons for air monitoring.

c. Types of samples and interpretation of results, specifically from analysis performed by polarized light, phase-contrast, and electron microscopy analyses.

10. Relevant federal, state, and local regulatory requirements, procedures and standards including:

a. Requirements of TSCA Title II;

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

c. OSHA Standards for Respiratory Protection (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 for Asbestos-Containing Waste Materials, 9VAC20-80-640; and

g. 49 CFR Part 172, Subpart H, Department of Transportation regulations covering packaging, proper marking of shipping containers and shipping papers.

11. A review of NESHAP Guidance Documents.

a. Common Questions on the Asbestos NESHAP.

b. Asbestos NESHAP: Regulated Asbestos Containing Materials Guidance (EPA 340/1-90-018).

c. Asbestos NESHAP: Adequately Wet Guidance (EPA 340/1-90-019).

d. Reporting and Record Keeping Requirements for Waste Disposal: A Field Guide (EPA 340/1-90-016).

12. Respiratory protection programs and medical surveillance programs.

13. Insurance and liability issues.

a. Contractor issues, workers' compensation coverage, and exclusions.

b. Third-party liabilities and defenses.

c. Insurance coverage and exclusions.

14. Recordkeeping for asbestos abatement projects:

a. Records required by federal, state, and local regulations.

b. Records recommended for legal and insurance purposes.

15. Supervisory techniques for asbestos abatement activities. Supervisory practices to enforce and reinforce the required work practices and to discourage unsafe work practices.

16. Contract specifications. Discussions of key elements that are included in contract specifications.

17. Training program review. A review of key aspects of the accredited asbestos

training program.

Historical Notes
Derived from VR137-01-02 § 16.5, eff. September 1, 1994; amended, Virginia Register Volume 18, Issue 6, eff. January 2, 2002.

18VAC15-20-750. Examinations: asbestos abatement supervisors.

Upon completion of an approved accredited asbestos initial training program, a closed-book examination will be administered. Demonstration testing will also be permitted as part of the examination. Each examination shall cover the topics included in the training program. Persons who pass the examination and fulfill the training program requirements will receive a Certificate of Completion as specified in this chapter. The following are the requirements for an examination:

1. One hundred multiple choice questions; and

2. Passing score: 70% correct.

Historical Notes
Derived from VR137-01-02 § 16.6, eff. September 1, 1994; amended, Virginia Register Volume 18, Issue 6, eff. January 2, 2002.

18VAC15-20-760. Refresher training program.

A. Accredited asbestos refresher training programs shall be one day (eight hours) for asbestos abatement supervisors. The training program shall review federal and state regulations, discuss changes to the regulations, if applicable, and developments in state-of-the-art procedures. A review of the following topics from the initial accredited asbestos training program shall be included in the asbestos supervisor refresher training program:

1. Potential health effects related to asbestos exposure;

2. Employee personal protective equipment; including medical monitoring and respiratory protection program;

3. State-of-the-art work practices (with emphasis on work practices for removal, encapsulation, enclosure and repair and proper working techniques for minimizing fiber release, use of wet methods, use of negative pressure ventilation equipment and the use of high efficiency particulate air (HEPA) vacuums);

4. Additional safety hazards and medical monitoring;

5. Review of the Asbestos NESHAP, OSHA and DOT requirements; and

6. Review of Virginia regulations concerning asbestos licensing, removal and

disposal.

B. A written closed-book examination shall be included in the refresher training program. The examination will consist of no fewer than 50 questions. The passing score will be 70% correct. Persons who pass the refresher training program examination will receive a Certificate of Completion. The certificate shall conform to the requirements of this chapter.

Historical Notes

Derived from VR137-01-02 § 16.7, eff. September 1, 1994; amended, Virginia Register Volume 18, Issue 6, eff. January 2, 2002.

18VAC15-20-770. Inspector training.

Asbestos inspectors shall complete a three-day (24 hours) training program as outlined below. The training program shall include lectures, demonstrations, four hours of hands-on training, training program review and a written examination. The accredited asbestos inspector training program shall address the following topics:

1. Training program overview.

   a. The role of the inspector in the asbestos abatement industry.

   b. A discussion of inspection requirements and criteria for AHERA, NESHAP and state agencies.

2. Background information on asbestos.

   a. Identification of asbestos, and examples and discussion of the uses and locations of asbestos in buildings.

   b. Physical appearance of asbestos.

3. Potential health effects related to asbestos exposure.

   a. The nature of asbestos-related diseases.

   b. Routes of exposure, dose-response relationships and the lack of a safe exposure level.

   c. The synergism between cigarette smoking and asbestos exposure.

   d. Latency period for asbestos-related diseases, a discussion of the relationship of asbestos exposure to asbestosis, lung cancer, mesothelioma and cancer of other organs.

4. Functions/qualifications for inspectors.

    a. Discussions of prior experience and qualifications for inspectors and management planners.

    b. Discussions of the functions of an accredited inspector as compared to those of an accredited management planner.

    c. Discussion of the inspection process including inventory of ACM and physical assessment.

5. Legal liabilities and defenses.

    a. Responsibilities of the inspector, a discussion of comprehensive general liability policies, claims made and occurrence policies, environment and pollution liability policy clauses; state liability insurance requirements.

    b. Bonding and relationship of insurance availability to bond availability.

6. Understanding building systems.

    a. The relationship 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.

    b. Building mechanical systems, their types and organization and where to look for asbestos on such systems.

    c. Inspecting electrical systems, including appropriate safety precautions.

    d. Reading building plans and as-built drawings.

7. Public/employee/building occupant relations.

    a. Notification of employee organizations about the inspection.

    b. Signs to warn building occupants.

    c. Tactics in dealing with occupants and the press.

    d. Scheduling inspections to minimize disruptions.

    e. Education of building occupants about actions being taken.

8. Preinspection planning and review of previous inspection records.

    a. Scheduling the inspection and obtaining access.

    b. Building record review; identification of probable homogeneous areas from building plans or as-built drawings.

    c. Consultation with maintenance or building personnel.

    d. Review of previous inspection, sampling, and abatement records of a building.

    e. The role of the inspector in exclusions for previously performed inspections.

9. Inspection for friable and nonfriable ACM and assessment of the condition of friable ACM.

    a. Procedures to follow in conducting visual inspections for friable and nonfriable ACM.

    b. Types of building materials that may contain asbestos.

    c. Touching materials to determine friability.

    d. Open return air plenums and their importance in HVAC systems.

    e. Assessing damage, significant damage, potential damage, and potential significant damage.

    f. Amount of suspected ACM, both in total quantity and as a percentage of the total area.

    g. Type of damage.

    h. Accessibility.

    i. Material's potential for disturbance.

    j. Known or suspected causes of damage or significant damage, and deterioration as assessment factors.

10. Bulk sampling/documentation of asbestos in schools.

    a. Detailed discussion of the "Simplified Sampling Scheme for Friable Surfacing Materials" (EPA 560/5-85-030a October 1985).

b. Techniques to ensure sampling in a randomly distributed manner for other than friable surfacing materials.

c. Techniques for bulk sampling.

d. Sampling equipment the inspector should use.

e. Patching or repair of damage done in sampling; an inspector's repair kit.

f. Discussion of polarized light microscopy.

g. Choosing an accredited laboratory to analyze bulk samples.

h. Quality control and quality assurance procedures.

11. Inspector respiratory protection and equipment.

a. Classes and characteristics of respirator types.

b. Limitations of respirators.

c. Selection, inspection, donning, use, maintenance, and storage procedures for respirators.

d. Methods for field testing of the facepiece-to-face seal (positive and negative pressure fitting tests); qualitative and quantitative fit testing procedures.

e. Variability between field and laboratory protection factors.

f. Factors that alter respirator fit (e.g., facial hair, dental work, weight loss or gain).

g. The components of a proper respiratory protection program.

h. Selection and use of personal protective clothing.

i. Use, storage, and handling of nondisposable clothing.

12. Recordkeeping and writing the inspection report.

a. Labeling of samples and keying sample identification to sampling location.

b. Recommendations on sample labeling.

c. Detailing of ACM inventory.

d. Photographs of selected sampling areas and examples of ACM condition.

e. Information required for inclusion in the management plan by TSCA Title II section 203 (i)(1).

13. Regulatory review.

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

b. TSCA Title II.

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

d. OSHA respirator requirements (29 CFR 1910.134).

e. The friable ACM in Schools Rule found at 40 CFR Part 763, Subpart F.

f. Applicable state and local regulations.

g. Differences in federal and state requirements where they apply and the effects, if any, on public and nonpublic schools, and commercial and public buildings.

14. Field trip.

a. Field exercise with a walk-through inspection.

b. On-site discussion of information gathering and determination of sampling locations.

c. On-site practice in physical assessment.

d. Classroom discussion of field exercise.

15. Training program review. A review of key aspects of the accredited asbestos training program.

Historical Notes
Derived from VR137-01-02 § 16.8, eff. September 1, 1994; amended, Virginia Register Volume 18, Issue 6, eff. January 2, 2002.

18VAC15-20-780. Examinations: asbestos inspectors.

Upon completion of an accredited asbestos inspector training program, a closed-book examination

will be administered. Each examination shall cover the topics included in the inspector training program. Persons who pass the examination and fulfill training program requirements will receive a Certificate of Completion as specified in this chapter. The following are the requirements for examination:

1. One hundred multiple choice questions; and

2. Passing score: 70% correct.

Historical Notes
Derived from VR137-01-02 § 16.9, eff. September 1, 1994; amended, Virginia Register Volume 18, Issue 6, eff. January 2, 2002.

18VAC15-20-790. Refresher training program.

A. Accredited asbestos refresher training programs shall be one-half day (four hours) for inspectors. The training program shall review federal and state regulations, discuss changes to the regulations, if applicable, and review developments in state-of-the-art procedures. A review of the following topics from the initial accredited asbestos training program shall be included in the accredited asbestos inspector refresher training program:

1. Inspection for friable and nonfriable asbestos-containing material (ACM) and assessment of the condition of friable ACM;

2. Bulk sampling/documentation of asbestos in schools; and

3. Reinspection and reassessment techniques.

B. The use of exercises to encourage interactive learning and participation is suggested. These exercises may take the form of reviewing building plans, inspection reports, a video or photo walk-through of an area to be inspected and written interviews with maintenance personnel to draw upon items covered in the initial accredited asbestos inspector training program.

C. A written closed-book examination will be administered covering the topics included in the asbestos inspector refresher training program. The examination will consist of no fewer than 50 questions. The passing score will be 70% correct. Persons who pass the asbestos inspector refresher training program examination will receive a Certificate of Completion as specified in this chapter.

Historical Notes
Derived from VR137-01-02 § 16.10, eff. September 1, 1994; amended, Virginia Register Volume 18, Issue 6, eff. January 2, 2002.

18VAC15-20-800. Asbestos management planner training.

Asbestos management planners shall complete an accredited asbestos inspector training program as provided in 18VAC15-20-770 and a two-day accredited asbestos management planner training program. The two-day (16 hours) accredited asbestos training program shall include lectures, demonstrations, program review, and a written examination. The accredited asbestos management planner training program shall address the following topics:

1. Training program overview.

    a. The role of the management planner.

    b. Operations and maintenance programs.

    c. Setting work priorities; protection of building occupants.

2. Evaluation/interpretation of survey results.

    a. Review of TSCA Title II requirements for inspection and management plans as given in section 203(i)(1) of TSCA Title II.

    b. Summarized field data and laboratory results; comparison between field inspector's data sheet with laboratory results and site survey.

3. Hazard assessment.

    a. Amplification of the difference between physical assessment and hazard assessment.

    b. The role of the management planner in hazard assessment.

    c. Explanation of significant damage, damage, potential damage, and potential significant damage and use of a description (or decision tree) code for assessment of ACM; assessment of friable ACM.

    d. Relationship of accessibility, vibration sources, use of adjoining space, air plenums and other factors to hazard assessment.

4. Legal implications.

    a. Liability; insurance issues specific to management planners.

    b. Liabilities associated with interim control measures, in-house maintenance, repair, and removal.

c. Use of results from previous inspections.

5. Evaluation and selection of control options.

a. Overview of encapsulation, enclosure, interim operations and maintenance, and removal; advantages and disadvantages of each method.

b. Response actions described via a decision tree or other appropriate method; work practices for each response action.

c. Staging and prioritizing of work in both vacant and occupied buildings.

d. The need for containment barriers and decontamination in response actions.

6. Role of other professionals.

a. Use of industrial hygienists, engineers and architects in developing technical specifications for response actions.

b. Any requirements that may exist for an architect to sign-off on plans.

c. Team approach to designing of high-quality job specifications.

7. Developing an operations and maintenance (O&M) plan.

a. Purpose of the plan.

b. Discussion of applicable EPA guidance documents.

c. What actions should be taken by custodial staff: proper cleaning procedures; steam cleaning and high efficiency particulate air (HEPA) vacuuming.

d. Reducing disturbance of ACM.

e. Scheduling O&M for off-hours; rescheduling or canceling renovation in areas with ACM.

f. Boiler room maintenance.

g. Disposal of ACM.

h. In-house procedures for ACM: bridging and penetrating encapsulants,

pipe fittings, metal sleeves, poly vinyl chloride (PVC), canvas, and wet wraps; muslin with straps; fiber mesh cloth; mineral wool, and insulating cement.

i. Discussion of employee protection programs and staff training.

j. Case study in developing an O&M plan (development, implementation process, and problems that have been experienced).

8. Recordkeeping for the management planner.

a. Use of field inspector's data sheet along with laboratory results.

b. On-going recordkeeping as a means to track asbestos disturbance.

c. Procedures for recordkeeping.

9. Assembling and submitting the management plan.

a. Plan requirements in TSCA Title II section 203(I)(1).

b. The management plan as a planning tool.

10. Financing abatement actions.

a. Economic analysis and cost estimates.

b. Development of cost estimates.

c. Present costs of abatement versus future operations and maintenance costs.

d. Asbestos School Hazard Abatement Act grants and loans.

11. A review of key aspects of the accredited asbestos training program.

Historical Notes
Derived from VR137-01-02 § 16.11, eff. September 1, 1994; amended, Virginia Register Volume 18, Issue 6, eff. January 2, 2002.

18VAC15-20-810. Examinations: asbestos management planners.

Upon completion of an accredited asbestos management planner training program, a closed-book examination will be administered. Each examination shall cover the topics included in the management planner training program. Persons who pass the examination and fulfill training program requirements will receive a Certificate of Completion as specified in this chapter. The

following are the requirements for examination:

1. One hundred multiple choice questions; and

2. Passing score: 70% correct.

Historical Notes
Derived from VR137-01-02 § 16.12, eff. September 1, 1994; amended, Virginia Register Volume 18, Issue 6, eff. January 2, 2002.

18VAC15-20-820. Refresher training program.

A. Management planners shall attend both the management planner refresher training program of one-half day (four hours) and the inspector refresher training program of one-half day (four hours). The management planner refresher training program shall review federal and state regulations, discuss changes, if applicable, and review developments in state-of-the-art procedures. A review of the following topics from the initial accredited asbestos

management planner training program shall be included in the asbestos management planner refresher training program:

1. Evaluation and interpretation of survey results;

2. Hazard assessment;

3. Evaluation and selection of control options; and

4. Developing an Operations and Maintenance plan.

B. The use of exercises to encourage interactive learning and participation is suggested. These exercises may take the form of reviewing inspection reports, a video or photo walk-through of a building to have a management plan prepared for and a review of reinspection or abatement reports to update or prepare a management plan to draw upon items covered in the accredited asbestos inspector training program and the initial accredited asbestos management planner training program.

C. A written closed-book examination will be administered covering the topics included in the asbestos management planner refresher training program. The examination will consist of no fewer than 50 questions. The passing score will be 70% correct. Persons who pass the asbestos management planner refresher training program examination will receive a Certificate of Completion as specified in this chapter.

Historical Notes
Derived from VR137-01-02 § 16.13, eff. September 1, 1994; amended, Virginia Register Volume 18, Issue 6, eff. January 2, 2002.

18VAC15-20-830. Asbestos project designer training.

Asbestos project designers shall complete a three-day (24 hours) training program as outlined below. The three-day asbestos project designer training program shall include lectures, demonstrations, a field trip, training program review, and a written examination. The three-day asbestos project designer training program shall address the following topics:

1. Training program overview.

   a. The role of the project designer in the asbestos abatement industry.

   b. Discussion of what a project design is.

2. Background information on asbestos.

   a. Identification of asbestos; examples and discussion of the uses and locations of asbestos in buildings.

   b. Physical appearance of asbestos.

3. Potential health effects related to asbestos exposure.

   a. Nature of asbestos-related diseases.

   b. Routes of exposure, dose-response relationships and the lack of a safe exposure level.

   c. The synergistic effect between cigarette smoking and asbestos exposure.

   d. The latency period of asbestos-related diseases; a discussion of the relationship between asbestos exposure and asbestosis, lung cancer, mesothelioma, and cancer of other organs.

4. Overview of abatement construction projects.

   a. Abatement as a portion of a renovation project.

   b. OSHA requirements for notification of other contractors on a multi-employer site (29 CFR 1926.1101).

5. Safety system design specifications.

   a. Construction and maintenance of containment barriers and decontamination

enclosure systems.

b. Positioning of warning signs.

c. Electrical and ventilation system lock-out.

d. Proper working techniques for minimizing fiber release.

e. Entry and exit procedures for the work area, use of wet methods, use of negative pressure exhaust ventilation equipment, use of high efficiency particulate air (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.

6. Field trip.

a. Visit a proposed abatement site or other suitable building site, including on-site discussions of abatement design.

b. Building walk-through inspection, and discussion following the walk-through.

7. Employee personal protective equipment.

a. Classes and characteristics of respirator types.

b. Limitations of respirators, proper selection, inspection, donning, use, maintenance, and storage procedures.

c. Methods for field testing of the facepiece-to-face seal (positive and negative pressure fitting tests).

d. Qualitative and quantitative fit testing procedures.

e. Variability between field and laboratory protection factors, factors that alter respirator fit (e.g., facial hair, dental work and weight loss or gain).

f. Components of a proper respiratory protection program.

g. Selection and use of personal protective clothing, use, storage and handling of nondisposable clothing.

h. Regulations covering personal protective equipment.

8. Additional safety hazards.

a. Hazards encountered during abatement activities and how to deal with them.

b. Electrical hazards, heat stress, air contaminants other than asbestos, fire and explosion hazards.

9. Fiber aerodynamics and control.

a. Aerodynamic characteristics of asbestos fibers.

b. Importance of proper containment barriers.

c. Settling time for asbestos fibers.

d. Wet methods in abatement.

e. Aggressive air monitoring following abatement.

f. Aggressive air movement and negative pressure exhaust ventilation as a clean-up method.

10. Designing abatement solutions.

a. Discussions of removal, enclosure, and encapsulation methods.

b. Asbestos waste disposal.

11. Budgeting/cost estimation.

a. Development of cost estimates.

b. Present costs of abatement versus future operations and maintenance costs.

c. Setting priorities for abatement jobs to reduce cost.

12. Writing abatement specifications.

a. Means and methods specifications versus performance specifications.

b. Design of abatement in occupied buildings.

c. Modification of guide specifications to a particular building.

d. Worker and building occupant health/medical considerations.

e. Replacement of ACM with non-asbestos substitutes.

f. Clearance of work area after abatement.

g. Air monitoring for clearance.

13. Preparing abatement drawings.

a. Use of as-built drawings.

b. Use of inspection photographs and on-site reports.

c. Particular problems in abatement drawings.

14. Contract preparation and administration.

15. Legal/liabilities/defenses.

a. Insurance considerations, bonding, hold harmless clauses, and use of abatement contractor's liability insurance.

b. Claims-made versus occurrence policies.

16. Replacement of asbestos with asbestos-free substitutes.

17. Role of other consultants.

a. Development of technical specification sections by industrial hygienists or engineers.

b. The multi-disciplinary team approach to abatement design.

c. The use and responsibilities of a project monitor on the abatement site.

18. Occupied buildings.

a. Special design procedures required in occupied buildings.

b. Education of occupants.

c. Extra monitoring recommendations.

d. Staging of work to minimize occupant exposure.

e. Scheduling of renovation to minimize exposure.

19. Relevant federal, state and local regulatory requirements. Procedures and standards including:

a. Requirements of TSCA Title II;

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

c. OSHA standards for respiratory protection (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; and

f. OSHA Hazard Communication Standard found in 29 CFR 1926.59.

20. A review of key aspects of the accredited asbestos training program.

Historical Notes
Derived from VR137-01-02 § 16.14, eff. September 1, 1994; amended, Virginia Register Volume 18, Issue 6, eff. January 2, 2002.

18VAC15-20-840. Examinations: asbestos project designers.

Upon completion of an accredited asbestos project designer training program, a closed-book examination will be administered. Each examination shall cover the topics included in the asbestos project designer training program. Persons who pass the examination and fulfill training program requirements will receive a Certificate of Completion as specified in this chapter. The following are the requirements for examination:

1. One hundred multiple choice questions; and

2. Passing score: 70% correct.

Historical Notes
Derived from VR137-01-02 § 16:15, eff. September 1, 1994; amended, Virginia Register Volume 18, Issue 6, eff. January 2,

2002.

18VAC15-20-850. Refresher training program.

A. The accredited asbestos project designer refresher training program shall be one day (eight hours) in length. The training program shall review federal and state regulations, discuss changes to the regulations, if applicable, and review developments in state-of-the-art procedures. A review of the following topics from the initial project designer training program shall be included in the accredited asbestos project designer refresher training program:

1. Safety system design specifications;

2. Writing abatement specifications;

3. Employee personal protective equipment; and

4. Budgeting and cost estimation.

B. The use of exercises to encourage interactive learning and participation is suggested. These exercises may take the form of reviewing inspection reports, a video or photo walk-through of a building to prepare a response action, a review of a mock-up cost list of equipment and materials utilized for various response actions to be designed within certain budget constraints and recommending a response action based upon the cost, budget and material condition constraints.

C. A written closed-book examination will be administered covering the topics included in the asbestos project designer refresher training program. The examination will consist of no fewer than 50 questions. The passing score will be 70% correct. Persons who pass the asbestos project designer refresher training program will receive a Certificate of Completion as specified in this chapter.

Historical Notes
Derived from VR137-01-02 § 16.16, eff. September 1, 1994; amended, Virginia Register Volume 18, Issue 6, eff. January 2, 2002.

18VAC15-20-860. Project monitor training.

A. Asbestos abatement project monitors shall complete a five-day (40 hours) training program as outlined below. All training programs shall be approved by the board. The accredited asbestos training program shall include lectures, demonstrations, training program review, examination, and at least six hours of hands-on training which allows project monitors the experience of performing actual tasks associated with asbestos project monitoring. Those applicants who hold current supervisor or project designer accreditation need not complete the entire 40-hour accredited asbestos training program, but may complete the 16-hour

portion of the training program described in subdivision B 1 of this section and take the examination. The comprehensive 40-hour accredited asbestos project monitor training program shall address the following topics:

1. The physical characteristics of asbestos and asbestos-containing materials.

   a. Identification of asbestos.

   b. Typical uses and locations in buildings, physical appearance.

   c. A review of hazard assessment control options.

   d. A summary of abatement control options.

2. Potential health effects related to asbestos exposure.

   a. The nature of asbestos-related diseases.

   b. Routes of exposure, dose-response relationships and the lack of a safe exposure level.

   c. Synergism between cigarette smoking and asbestos exposure.

   d. Latency period for disease; a discussion of the relationship between asbestos exposure and asbestosis, lung cancer, mesothelioma, and cancer of the other organs.

3. Employee personal protective equipment.

   a. Classes and characteristics of respirator types.

   b. Limitations of respirators and their proper selection, inspection, donning, use, maintenance and storage procedures.

   c. Methods for field testing of the facepiece-to-face seal (positive and negative pressure fitting tests).

   d. Qualitative and quantitative fit testing procedures.

   e. Variability between field and laboratory protection factors.

   f. Factors that alter respirator fit (e.g., facial hair, dental work, weight loss or gain).

g. The components of a proper respiratory protection program.

h. Selection and uses of personal protective clothing; use, storage, and handling of nondisposable clothing.

i. Regulations covering personal protection equipment.

4. State of the art work practices.

a. Work practices for asbestos abatement activities including description of proper construction and maintenance barriers and decontamination enclosure systems.

b. Positioning of warning signs.

c. Electrical and ventilation system lock-out.

d. Working techniques for minimizing fiber release, use of wet methods, use of negative pressure ventilation equipment, use of high efficiency particulate air (HEPA) vacuums. Entry and exit procedures for work area.

e. Clean-up and disposal procedures.

f. Work practices for removal, encapsulation, enclosure and repair. Use of glove bags and a demonstration of glove bag use.

g. Emergency procedures for sudden release.

h. Potential exposure situations.

i. Transport and disposal procedures.

j. Recommended and prohibited work practices.

k. Discussion of new abatement related techniques and methodologies.

5. Personal hygiene.

a. 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.

b. Potential exposures, such as family exposure, shall also be included.

6. Additional safety hazards as covered in OSHA CFR Parts 1926 and 1910 to include:

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

b. Scaffold and ladder hazards;

c. Slips, trips and falls; and

d. Confined spaces.

7. Medical monitoring. OSHA requirements for a pulmonary function test, chest x- rays and a medical history for each employee.

8. Respiratory protection programs and medical surveillance programs.

9. Insurance and liability issues:

a. Contractor issues, workers' compensation coverage, and exclusions.

b. Third-party liabilities and defenses.

c. Insurance coverage and exclusions.

10. Relevant federal, state and local regulatory requirements, procedures and standards including:

a. Requirements of TSCA Title II;

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

c. OSHA Standards for respiratory protection (29 CFR 1910.134);

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

e. OSHA Hazard Communication Standard (29 CFR 1926.59);

f. EPA Worker Protection Rule, 40 CFR Part 763;

g. Requirements of Asbestos-Containing Waste Materials, 9VAC20-80-640;

h. DOT 49 CFR Parts 171 and 172 Subpart H; and

i. Virginia asbestos licensing regulations.

B. The material outlined below encompasses the 16-hour accredited asbestos project monitor training program. Those applicants who are currently accredited as supervisors or project designers need only complete the 16-hour project monitor training program and examination. The comprehensive 40-hour project monitor training program includes the preceding topics and continues below.

1. Air monitoring.

a. NIOSH Asbestos Monitoring Procedure. Procedures to determine airborne concentration of asbestos fibers, including a description of aggressive sampling, sampling equipment and methods.

(1) Explanation of analytical methods, measures of precision, control of errors, collecting samples, fiber counts, sampling and calibration equipment, statistics, quality control techniques in sampling.

(2) Review of OSHA Asbestos Regulations 29 CFR Part 1926, Subpart F, 1-6.

b. Sampling strategy.

(1) Why samples are taken.

(2) Sampling inside and outside of containment area.

(3) Placement of pumps.

c. Reasons for air monitoring.

d. Types of samples and interpretation of results, specifically from analysis performed by polarized light, phase-contrast, and electron microscopy analyses.

e. Final clearance.

2. Overview of supervisory techniques for asbestos abatement activities to include the information covered in the accredited asbestos supervisor training program. A review of the required work practices and safety considerations.

3. Field trip.

a. Visit a proposed abatement site or other suitable building site, including on-site discussions of abatement design.

b. Building walk-through inspection and discussion following the walk through.

4. Fiber aerodynamics and control.

a. Aerodynamic characteristics of asbestos fibers.

b. Importance of proper containment barriers.

c. Settling time for asbestos fibers.

d. Wet methods in abatement.

e. Aggressive air monitoring following abatement.

f. Aggressive air movement and negative pressure exhaust ventilation as a clean-up method.

5. Project specifications. Discussion of key elements that are included in contract specifications.

a. Means and methods specifications versus performance specifications.

b. Considerations for design of abatement in occupied buildings.

c. Worker and building occupant health/medical considerations.

d. Replacement of ACM with nonasbestos substitutes.

e. Clearance of work area after abatement.

f. Use of as-built drawings.

g. Use of inspection photographs and on-site reports.

h. Particular problems in abatement drawings.

6. Conducting inspections.

a. Inspection prior to containment to assure condition of items and proper precleaning.

b. Inspection of containment prior to commencement of abatement to assure that containment is complete and proper.

c. Daily work and containment inspections.

d. Final visual inspection and a discussion of the ASTM E1368 method.

7. Recordkeeping and documentation.

a. Project logs.

b. Inspection reports.

c. Waste shipment record requirements (WSR).

d. Recordkeeping required by federal, state or local regulations.

e. Recordkeeping required for insurance purposes.

8. Role of project monitor in relation to:

a. Building owner;

b. Building occupants;

c. Abatement contractor; and

d. Other consultants.

9. Occupied buildings.

a. Special procedures recommended in occupied buildings.

b. Extra monitoring recommendations.

10. A review of NESHAP Guidance Documents.

11. A review of key aspects of the accredited asbestos training program.

12. Examination.

Historical Notes

Derived from VR137-01-02 § 16.17, eff. September 1, 1994; amended, Virginia Register Volume 18, Issue 6, eff. January 2, 2002.

18VAC15-20-870. Examination: asbestos project monitors.

Upon completion of an accredited asbestos project monitor training program, a closed-book examination will be administered. Each examination shall cover the topics included in the project monitor training program. Persons who pass the examination and fulfill training program requirements will receive a Certificate of Completion as specified in this chapter. The following are the requirements for examination:

1. One hundred multiple choice questions; and

2. Passing score: 70% correct.

Historical Notes

Derived from VR137-01-02 § 16.18, eff. September 1, 1994; amended, Virginia Register Volume 18, Issue 6, eff. January 2, 2002.

18VAC15-20-880. Refresher training program.

A. The accredited asbestos project monitor refresher training program shall be one day (eight hours) in length. The training program shall review federal and state regulations, discuss changes to the regulations, if applicable, and review developments in state-of-the-art procedures. A review of the following topics from the initial accredited asbestos project monitor training program shall be included in the asbestos project monitor refresher training program:

1. State-of-the-art work practices;

2. Occupied buildings;

3. Employee personal protective equipment;

4. Fiber aerodynamics and control; and

5. Recordkeeping and documentation.

B. The use of exercises to encourage interactive learning and participation is suggested. These exercises may take the form of reviewing inspection reports, a video or photo walk-through of a building to determine a sampling strategy, a review of a mock-up abatement area to determine that containment is adequate, or review of a mock-up abatement area where a visual inspection may be performed.

C. A written closed-book examination will be administered covering the topics included in the asbestos project monitor refresher training program. The examination will consist of no fewer than 50 questions. The passing score will be 70% correct. Persons who pass the

asbestos project monitor refresher training program examination will receive a Certificate of Completion as specified in this chapter.

Historical Notes
Derived from VR137-01-02 § 16.19, eff. September 1, 1994; amended, Virginia Register Volume 18, Issue 6, eff. January 2, 2002.

18VAC15-20-890 to 18VAC15-20-960. [Repealed]

Historical Notes
Derived from VR137-01-02 §§ 16.20 to 16.26, eff. September 1, 1994; amended, Virginia Register Volume 13, Issue 10, eff. April 1, 1997; Errata, 13:11 VA.R. 1219-1220 February 17, 1997; amended, Virginia Register Volume 16, Issue 11, eff. May 1, 2000; repealed, Virginia Register Volume 18, Issue 6, eff. January 2, 2002.

Included in this document are relevant excerpts from the *Code of Virginia*. Please note that the Virginia General Assembly is responsible for creating and amending the *Code*, not the Virginia Board for Asbestos, Lead, and Home Inspectors. The version contained herein contains all changes, if any, that have been made by the General Assembly through the 2020 session. Any changes made during the 2020 session became effective July 1, 2020, unless otherwise noted. It is your responsibility to stay informed of revisions to the regulations and the statutes governing your profession or occupation. Please consult the General Assembly or your local library for annual changes.

Code of Virginia

Title 54.1, Chapter 5

Article 1
General Provisions

§ 54.1-500. Definitions.

As used in this chapter, unless the context requires a different meaning:

"Accredited asbestos training program" means a training program that has been approved by the Board to provide training for individuals to engage in asbestos abatement, conduct asbestos inspections, prepare management plans, prepare project designs or act as project monitors.

"Accredited lead training program" means a training program that has been approved by the Board to provide training for individuals to engage in lead-based paint activities.

"Accredited renovation training program" means a training program that has been approved by the Board to provide training for individuals to engage in renovation or dust clearance sampling.

"Asbestos" means the asbestiform varieties of actinolite, amosite, anthophyllite, chrysotile, crocidolite, and tremolite.

"Asbestos analytical laboratory license" means an authorization issued by the Board to perform phase contrast, polarized light, or transmission electron microscopy on material known or suspected to contain asbestos.

"Asbestos contractor's license" means an authorization issued by the Board permitting a person to enter into contracts to perform an asbestos abatement project.

"Asbestos-containing materials" or "ACM" means any material or product which contains more than 1.0 percent asbestos or such other percentage as established by EPA final rule.

"Asbestos inspector's license" means an authorization issued by the Board permitting a person to perform on-site investigations to identify, classify, record, sample, test and prioritize by exposure potential asbestos-containing materials.

"Asbestos management plan" means a program designed to control or abate any potential risk to human health from asbestos.

"Asbestos management planner's license" means an authorization issued by the Board permitting a person to develop or alter an asbestos management plan.

"Asbestos project" or "asbestos abatement project" means an activity involving job set-up for containment, removal, encapsulation, enclosure, encasement, renovation, repair, construction or alteration of an asbestos-containing material. An asbestos project or asbestos abatement project shall not include nonfriable asbestos-containing roofing, flooring and siding materials which when installed, encapsulated or removed do not become friable.

"Asbestos project designer's license" means an authorization issued by the Board permitting a person to design an asbestos abatement project.

"Asbestos project monitor's license" means an authorization issued by the Board permitting a person to monitor an asbestos project, subject to Department regulations.

"Asbestos supervisor" means any person so designated by an asbestos contractor who provides on-site supervision and direction to the workers engaged in asbestos projects.

"Asbestos worker's license" means an authorization issued by the Board permitting an individual to work on an asbestos project.

"Board" means the Virginia Board for Asbestos, Lead, and Home Inspectors.

"Dust clearance sampling" means an on-site collection of dust or other debris that is present after the completion of a renovation to determine the presence of lead-based paint hazards and the provisions of a report explaining the results.

"Dust sampling technician" means an individual licensed by the Board to perform dust clearance sampling.

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

"Home inspection" means any inspection of a residential building for compensation conducted by a licensed home inspector. A home inspection shall include a written evaluation of the readily accessible components of a residential building, including heating, cooling, plumbing, and electrical systems; structural components; foundation; roof; masonry structure; exterior and interior components; and other

related residential housing components. A home inspection may be limited in scope as provided in a home inspection contract, provided that such contract is not inconsistent with the provisions of this chapter or the regulations of the Board. For purposes of this chapter, residential building energy analysis alone, as defined in § 54.1-1144, shall not be considered a home inspection.

"Home inspector" means a person who meets the criteria of education, experience, and testing required by this chapter and regulations of the Board and who has been licensed by the Board to perform home inspections.

"Lead abatement" means any measure or set of measures designed to permanently eliminate lead-based paint hazards, including lead-contaminated dust or soil.

"Lead-based paint" means paint or other surface coatings that contain lead equal to or in excess of 1.0 milligrams per square centimeter or more than 0.5 percent by weight.

"Lead-based paint activity" means lead inspection, lead risk assessment, lead project design and abatement of lead-based paint and lead-based paint hazards, including lead-contaminated dust and lead-contaminated soil.

"Lead-contaminated dust" means surface dust that contains an area or mass concentration of lead at or in excess of levels identified by the Environmental Protection Agency pursuant to § 403 of TSCA (15 U.S.C. § 2683).

"Lead-contaminated soil" means bare soil that contains lead at or in excess of levels identified by the Environmental Protection Agency.

"Lead contractor" means a person who has met the Board's requirements and has been issued a license by the Board to enter into contracts to perform lead abatements.

"Lead inspection" means a surface-by-surface investigation to determine the presence of lead-based paint and the provisions of a report explaining the results of the investigation.

"Lead inspector" means an individual who has been licensed by the Board to conduct lead inspections and abatement clearance testing.

"Lead project design" means any descriptive form written as instructions or drafted as a plan describing the construction or setting up of a lead abatement project area and the work practices to be utilized during the lead abatement project.

"Lead project designer" means an individual who has been licensed by the Board to prepare lead project designs.

"Lead risk assessment" means (i) an on-site investigation to determine the existence, nature, severity and location of lead-based paint hazards and (ii) the provision of a report by the individual or the firm

conducting the risk assessment, explaining the results of the investigation and options for reducing lead-based paint hazards.

"Lead risk assessor" means an individual who has been licensed by the Board to conduct lead inspections, lead risk assessments and abatement clearance testing.

"Lead supervisor" means an individual who has been licensed by the Board to supervise lead abatements.

"Lead worker" or "lead abatement worker" means an individual who has been licensed by the Board to perform lead abatement.

"Person" means a corporation, partnership, sole proprietorship, firm, enterprise, franchise, association or any other individual or entity.

"Principal instructor" means the individual who has the primary responsibility for organizing and teaching an accredited asbestos training program, an accredited lead training program, an accredited renovation training program, or any combination thereof.

"Renovation" means the modification of any existing structure or portion thereof, for compensation, that results in the disturbance of painted surfaces, unless that activity is (i) performed as a part of a lead abatement or (ii) limited in scope to the site work or remediation as referenced in the definition of contractor in § 54.1-1100. As used in this definition, "compensation" shall include the receipt of (a) pay for work performed, such as that paid to contractors and subcontractors; (b) wages, including but not limited to those paid to employees of contractors, building owners, property management companies, child-occupied facilities operators, state and local government agencies, and nonprofit organizations; and (c) rent for housing constructed before January 1, 1978, or child-occupied facilities in public or commercial building space.

"Renovation contractor" means a person who has met the Board's requirements and has been issued a license by the Board to conduct renovations.

"Renovator" means an individual who has been issued a license by the Board to perform renovations or to direct others who perform renovations.

"Residential building" means, for the purposes of home inspection, a structure consisting of one to four dwelling units used or occupied, or intended to be used or occupied, for residential purposes.

"Training manager" means the individual responsible for administering a training program and monitoring the performance of instructors for an accredited asbestos training, accredited lead training program or accredited renovation training program.

1987, c. 579, § 54-145.4; 1988, cc. 765, 802; 1989, c. 397; 1990, cc. 49, 73, 823; 1992, c. 152; 1993, cc. 499, 660; 1994, cc. 185, 911; 1996, cc. 76, 176, 180, 846; 1997, c. 885; 1998, c. 739; 2001, c. 723; 2009, cc. 358, 819; 2012, cc. 803, 835; 2016, cc. 161, 436, 527.

§ 54.1-500.1. Virginia Board for Asbestos, Lead, and Home Inspectors; membership; meetings; offices; quorum.

The Virginia Board for Asbestos, Lead, and Home Inspectors shall be appointed by the Governor and composed of 14 members as follows: one shall be a representative of a Virginia-licensed asbestos contractor, one shall be a representative of a Virginia-licensed lead contractor, one shall be a representative of a Virginia-licensed renovation contractor, one shall be either a Virginia-licensed asbestos inspector or project monitor, one shall be a Virginia-licensed lead risk assessor, one shall be a Virginia-licensed renovator, one shall be a Virginia-licensed dust sampling technician, one shall be a representative of a Virginia-licensed asbestos analytical laboratory, one shall be a representative of an asbestos, lead, or renovation training program, one shall be a member of the Board for Contractors, two shall be Virginia-licensed home inspectors, and two shall be citizen members. After initial staggered terms, the terms of members of the Board shall be four years, except that vacancies may be filled for the remainder of the unexpired term. The two home inspector members appointed to the Board shall have practiced as home inspectors for at least five consecutive years immediately prior to appointment. The renovation contractor, renovator, and dust sampling technician members appointed to the board shall have practiced respectively as a renovation contractor, renovator, or dust sampling technician for at least five consecutive years prior to appointment.

The Board shall meet at least once each year and other such times as it deems necessary. The Board shall elect from its membership a chairman and a vice-chairman to serve for a period of one year. Eight members of the Board shall constitute a quorum. The Board is vested with the powers and duties necessary to execute the purposes of this chapter.

1993, c. 660; 1994, cc. 185, 911; 1996, cc. 180, 846; 1997, c. 885; 2001, c. 723; 2009, cc. 358, 819; 2012, cc. 522, 803, 835; 2016, cc. 161, 436.

§ 54.1-501. Powers and duties of the Board.

The Board shall administer and enforce this chapter. The Board shall:

1. Promulgate regulations necessary to carry out the requirements of this chapter in accordance with the provisions of the Administrative Process Act (§ 2.2-4000 et seq.) to include but not be limited to the prescription of fees, procedures, and qualifications for the issuance and renewal of asbestos, lead, and renovation licenses, and governing conflicts of interest among various categories of asbestos, lead, and renovation licenses;

2. Approve the criteria for accredited asbestos training programs, accredited lead training programs, accredited renovation training programs, training managers, and principal instructors;

3. Approve accredited asbestos training programs, accredited lead training programs, accredited renovation training programs, examinations and the grading system for testing applicants for asbestos, lead, and renovation licensure;

4. Promulgate regulations governing the licensing of and establishing performance criteria applicable to asbestos analytical laboratories;

5. Promulgate regulations governing the functions and duties of project monitors on asbestos projects, circumstances in which project monitors shall be required for asbestos projects, and training requirements for project monitors;

6. Promulgate, in accordance with the Administrative Process Act, regulations necessary to establish procedures and requirements for the: (i) approval of accredited lead training programs, (ii) licensure of individuals and firms to engage in lead-based paint activities, and (iii) establishment of standards for performing lead-based paint activities consistent with the Residential Lead-based Paint Hazard Reduction Act and United States Environmental Protection Agency regulations. If the United States Environmental Protection Agency (EPA) has adopted, prior to the promulgation of any related regulations by the Board, any final regulations relating to lead-based paint activities, then the related regulations of the Board shall not be more stringent than the EPA regulations in effect as of the date of such promulgation. In addition, if the EPA shall have outstanding any proposed regulations relating to lead-based paint activities (other than as amendments to existing EPA regulations), as of the date of promulgation of any related regulations by the Board, then the related regulations of the Board shall not be more stringent than the proposed EPA regulations. In the event that the EPA shall adopt any final regulations subsequent to the promulgation by the Board of related regulations, then the Board shall, as soon as practicable, amend its existing regulations so as to be not more stringent than such EPA regulations;

7. Promulgate regulations for the licensing of home inspectors not inconsistent with this chapter regarding the professional qualifications of home inspectors applicants, the requirements necessary for passing home inspectors examinations, the proper conduct of its examinations, the proper conduct of the home inspectors licensed by the Board, and the proper discharge of its duties; and

8. Promulgate, in accordance with the Administrative Process Act, regulations necessary to establish procedures and requirements for the (i) approval of accredited renovation training programs, (ii) licensure of individuals and firms to engage in renovation, and (iii) establishment of standards for performing renovation consistent with the Residential Lead-based Paint Hazard Reduction Act and United States Environmental Protection Agency (EPA) regulations. Such regulations of the Board shall be consistent with the EPA Lead Renovation, Repair, and Painting Program final rule.

1987, c. 579, § 54-145.5; 1988, c. 765; 1989, c. 397; 1990, cc. 49, 73, 823; 1991, c. 45; 1992, c. 477; 1993, cc. 499, 660; 1994, cc. 185, 911; 1995, cc. 543, 585; 1996, cc. 180, 846; 1997, cc. 649, 885; 1998, c. 739; 2001, c. 723; 2009, cc. 358, 819; 2012, cc. 803, 835; 2016, cc. 161, 436.

§ 54.1-501.1. Applicability.

The provisions of this chapter shall not apply to any employer, or any employees of such employer, regulated by the federal Occupational Safety and Health Act, and under the enforcement authority of the Occupational Safety and Health Administration.

1992, c. 52.

§ 54.1-502. Interdepartmental implementation plan.

The Board, in conjunction with the Departments of General Services, Health, Labor and Industry, Education, and Environmental Quality, shall develop a plan for the implementation of this chapter which specifies the duties of each agency.

1987, c. 579, § 54-145.6; 1988, cc. 765, 802; 1989, c. 397; 1990, cc. 73, 823; 1993, c. 660.

§ 54.1-503. Licenses required.

A. It shall be unlawful for any person who does not have an asbestos contractor's license to contract with another person, for compensation, to carry out an asbestos project or to perform any work on an asbestos project. It shall be unlawful for any person who does not have an asbestos project designer's license to develop an asbestos project design. It shall be unlawful for any person who does not have an asbestos inspector's license to conduct an asbestos inspection. It shall be unlawful for any person who does not have an asbestos management planner's license to develop an asbestos management plan. It shall be unlawful for any person who does not have a license as an asbestos project monitor to act as project monitor on an asbestos project.

B. It shall be unlawful for any person who does not possess a valid asbestos analytical laboratory license issued by the Board to communicate the findings of an analysis, verbally or in writing, for a fee, performed on material known or suspected to contain asbestos for the purpose of determining the presence or absence of asbestos.

C. It shall be unlawful for any person who does not possess a license as a lead contractor to contract with another person to perform lead abatement activities or to perform any lead abatement activity or work on a lead abatement project. It shall be unlawful for any person who does not possess a lead supervisor's license to act as a lead supervisor on a lead abatement project. It shall be unlawful for any person who does not possess a lead worker's license to act as a lead worker on a lead abatement project. It shall be unlawful for any person who does not possess a lead project designer's license to develop a lead project design. It shall be unlawful for any person who does not possess a lead inspector's license to conduct a lead inspection. It shall be unlawful for any person who does not possess a lead risk assessor's license to conduct a lead risk assessment. It shall be unlawful for any person who does not possess a lead inspector's or lead risk assessor's license to conduct lead abatement clearance testing.

D. It shall be unlawful for any person who does not possess a license as a renovation contractor to perform renovation. It shall be unlawful for any person who does not possess a renovator's license to perform or direct others to perform renovation. It shall be unlawful for any person who does not possess a dust sampling technician's license to perform dust clearance sampling.

E. It shall be unlawful for any individual who does not possess a license as a home inspector issued by the Board to perform a home inspection for compensation on a residential building. It shall be unlawful for any individual who does not possess a home inspector license with the new residential structure endorsement to

conduct a home inspection for compensation on any new residential structure. For purposes of this chapter, "new residential structure" means a residential structure for which the first conveyance of record title to a purchaser has not occurred, or of which a purchaser has not taken possession, whichever occurs later.

1987, c. 579, § 54-145.7; 1988, cc. 765, 802; 1989, c. 397; 1990, c. 73; 1993, c. 660; 1994, cc. 185, 911; 1995, cc. 543, 585; 1996, cc. 180, 846; 1997, cc. 560, 885; 1998, c. 739; 2004, c. 133; 2009, c. 819; 2015, c. 411; 2016, cc. 161, 436.

§ 54.1-504. Asbestos supervisor's or worker's license required; exception.

After July 1, 1988, it shall be unlawful for an individual who does not have an asbestos supervisor's license or worker's license to work on an asbestos project. No asbestos supervisor's license or worker's license shall be required for a supervisor or worker in the installation, maintenance, repair or removal of asbestos-containing roofing, flooring or siding material, provided that such supervisor or worker shall satisfy any training requirements promulgated by the Board pursuant to § 54.1-501.

1987, c. 579, § 54-145.8; 1988, c. 765; 1989, c. 397; 1993, c. 660.

§ 54.1-504.1. Notices for handling asbestos.

The Department of Professional and Occupational Regulation shall include with every asbestos worker's license a notice, in English and Spanish, containing a summary of the basic worker safety procedures regarding the handling of asbestos and information on how to file a complaint with the Virginia Board for Asbestos, Lead, and Home Inspectors.

2016, c. 252.

§ 54.1-505. Qualification for an asbestos contractor's license.

To qualify for an asbestos contractor's license, an applicant shall:

1. Except as provided in § 54.1-504, ensure that each of his employees or agents who will come into contact with asbestos or who will be responsible for an asbestos project is licensed as an asbestos supervisor or worker; and

2. Demonstrate to the satisfaction of the Board that the applicant and his employees or agents are familiar with and are capable of complying fully with all applicable requirements, procedures and standards of the United States Environmental Protection Agency, the United States Occupational Safety and Health Administration, the Department of Labor and Industry, and the State Air Pollution Control Board covering any part of an asbestos project.

1987, c. 579, § 54-145.9; 1988, cc. 765, 802; 1989, c. 397; 1993, c. 660; 1996, cc. 180, 846.

§ 54.1-506. Repealed.
Repealed by Acts 1993, c. 660.

§ 54.1-507. Repealed.
Repealed by Acts 1992, c. 477.

§§ 54.1-508, 54.1-509. Repealed.
Repealed by Acts 1993, c. 660.

§ 54.1-510. Repealed.
Repealed by Acts 1988, c. 802.

§ 54.1-511. Repealed.
Repealed by Acts 1993, c. 660.

§ 54.1-512. Exemptions from licensure.

A. In an emergency, the Board may, at its discretion, waive the requirement for asbestos contractor's, supervisor's and worker's licenses.

B. Any employer, and any employee of such employer, who conducts an asbestos project on premises owned or leased by such employer shall be exempt from licensure.

C. Notwithstanding the provisions of the Virginia Tort Claims Act (§ 8.01-195.1 et seq.), neither the Commonwealth nor any agency or employee of the Commonwealth shall be subject to any liability as the result of a determination made by the Board hereunder.

D. Nothing in this chapter shall be construed as requiring the licensure of a contractor who contracts to undertake a project, a portion of which constitutes an asbestos or lead abatement project or renovation, if all of the asbestos or lead abatement work or renovation is subcontracted to a person licensed to perform such work in accordance with the provisions of this chapter.

E. This chapter shall not apply to any person who performs lead-based paint activities within residences which they own, unless the residence is occupied by a person or persons other than the owner or the owner's immediate family while these activities are being conducted or a child is residing in the property and has been identified as having an elevated blood-lead level.

F. This chapter shall not apply to renovations of owner-occupied housing constructed before 1978, provided the person performing renovations obtains a statement signed by the owner providing that (i) no child under the age of six or pregnant woman resides in the structure, (ii) the residence is not a child-occupied facility, and (iii) the owner acknowledges that renovations may not include all of the lead-safe work practices contained in the EPA Lead Renovation, Repair, and Painting Program final rule.

G. This chapter shall not apply to any person who performs renovations on (i) housing constructed after January 1, 1978, (ii) housing for the elderly or persons with disabilities, unless a child under the age of six resides or is expected to reside in the structure, or (iii) a structure that does not have bedrooms.

1987, c. 579, § 54-145.10:6; 1988, cc. 765, 807; 1989, c. 397; 1993, c. 660; 1996, cc. 180, 846; 1998, c. 739; 2009, c. 819.

§ 54.1-513. Repealed.

Repealed by Acts 1998, c. 739.

§ 54.1-514. Award of contracts by state agencies and political subdivisions.

A state agency or a political subdivision shall not award a contract in connection with an asbestos project to a person who does not hold an asbestos contractor's, inspector's, management planner's or project designer's license at the time the bid is submitted unless the general contractor to whom the contract is awarded will be contractually committed to have all asbestos related work performed by its own subcontractors who are appropriately licensed as asbestos contractors, inspectors, management planners or project designers pursuant to this chapter.

1987, c. 579, § 54-145.10:8; 1988, cc. 765, 802; 1989, c. 397; 1990, c. 105; 1996, cc. 180, 846.

§ 54.1-515. Employer discrimination; penalty.

Any employer who discriminates against or otherwise penalizes an employee who complains to or cooperates with the Board or any other governmental agency in administering this chapter is subject to the penalties in § 54.1-517.

1987, c. 579, § 54-145.10:9; 1988, c. 765; 1993, cc. 499, 660.

§ 54.1-516. Disciplinary actions.

A. The Board may reprimand, fine, suspend or revoke (i) the license of a lead contractor, lead inspector, lead risk assessor, lead project designer, lead supervisor, lead worker, asbestos contractor, asbestos supervisor, asbestos inspector, asbestos analytical laboratory, asbestos management planner, asbestos project designer, asbestos project monitor, asbestos worker, renovator, dust sampling technician, renovation contractor, or home inspector or (ii) the approval of an accredited asbestos training program, accredited lead training program, accredited renovation training program, training manager or principal instructor, if the licensee or approved person or program:

1. Fraudulently or deceptively obtains or attempts to obtain a license or approval;

2. Fails at any time to meet the qualifications for a license or approval or to comply with the requirements of this chapter or any regulation adopted by the Board; or

3. Fails to meet any applicable federal or state standard when performing an asbestos project or service, performing lead-based paint activities, or performing renovations.

B. The Board may reprimand, fine, suspend or revoke the license of (i) any asbestos contractor who employs or permits an individual without an asbestos supervisor's or worker's license to work on an

asbestos project, (ii) any lead contractor who employs or permits an individual without a lead supervisor's or lead worker's license to work on a lead abatement project, or (iii) any renovation contractor who employs or permits an individual without a renovator's license to perform or to direct others who perform renovations.

C. The Board may reprimand, fine, suspend or revoke the license of a home inspector.

1987, c. 579, § 54-145.10:10; 1988, cc. 765, 802; 1989, c. 397; 1990, c. 823; 1993, c. 660; 1994, cc. 185, 911; 1996, cc. 180, 846; 1997, c. 885; 1998, c. 739; 2001, c. 723; 2009, cc. 358, 819; 2012, cc. 803, 835; 2016, cc. 161, 436.

§ 54.1-516.1. Summary suspension of licenses or approvals; allegations to be in writing.

The Board may suspend the license or the approval of any (i) accredited training program, (ii) training manager or (iii) principal instructor of any person holding a license issued by it without a hearing simultaneously with the institution of proceedings for a hearing or an informal fact finding conference, if the relevant board finds that there is a substantial danger to the public health or safety that warrants this action. The Board may meet by telephone conference call when summarily suspending a license or the approval of an accredited training program, training manager or principal instructor if a good faith effort to assemble a quorum of the Board has failed and, in the judgment of a majority of the members of the Board, the continued practice by the licensee or approved individual or training program constitutes a substantial danger to the public health or safety. Institution of proceedings for a hearing or an informal fact finding conference shall be provided simultaneously with the summary suspension. Such hearing or conference shall be scheduled within a reasonable time of the date of the summary suspension. Allegations of violations of this section shall be made in accordance with § 54.1-307.1.

2004, c. 222.

§ 54.1-517. Penalties for willful violations.

Notwithstanding any other provision of law, any person who willfully violates any provision of this chapter or any regulation related to licensure or training adopted pursuant to this chapter shall be guilty of a Class 1 misdemeanor for the first two violations and a Class 6 felony for a third and each subsequent violation within a three-year period.

In addition, licensed asbestos contractors, asbestos supervisors, asbestos inspectors, asbestos management planners, asbestos project designers, asbestos project monitors, asbestos analytical laboratories and asbestos workers, lead contractors, lead inspectors, lead risk assessors, lead project designers, lead supervisors, lead workers, renovators, dust sampling technicians, renovation contractors, and accredited asbestos training programs, accredited lead training programs, accredited renovator training programs, training managers or principal instructors may be assessed a civil penalty by the Board of not more than $1,000 for an initial violation and $5,000 for each subsequent violation within a three-year period arising from a willful violation of standards established by the Environmental Protection Agency, Occupational Safety and Health Administration, Department of Labor and Industry, or the Divisions of Air Pollution Control and Waste Management of the Department of Environmental Quality in a three-year period.

1987, c. 579, § 54-145.10:11; 1988, cc. 765, 802; 1989, c. 397; 1990, c. 823; 1993, c. 660; 1994, cc. 185, 911; 1996, cc. 180, 846; 1997, c. 885; 1998, c. 739; 2009, c. 819.

Article 2
Home Inspectors

§ 54.1-517.1 Repealed.
Repealed by Acts cc. 161 and 436, cl. 2, effective July 1, 2017.

§ 54.1-517.2. Requirements for licensure.

A. The Board shall issue a license to practice as a home inspector in the Commonwealth to:

1. An individual who holds an unexpired certificate as a home inspector issued prior to June 30, 2017; or

2. An applicant who has successfully:

a. Completed the educational requirements as required by the Board;

b. Completed the experience requirements as required by the Board; and

c. Passed the examination approved by the Board.

B. The Board shall issue a license with the new residential structure endorsement to any applicant who completes a training module developed by the Board in conjunction with the Department of Housing and Community Development based on the International Residential Code component of the Virginia Uniform Statewide Building Code.

2001, c. 723; 2015, c. 411; 2016, cc. 161, 436.

§ 54.1-517.2:1. Home inspection; required statement related to the presence of yellow shaded corrugated stainless steel tubing.

A. As used in this section:

"Bonding" means connecting metallic systems to establish electrical continuity and conductivity.

"Corrugated stainless steel tubing" or "CSST" means a flexible stainless steel pipe used to supply natural gas or propane in residential, commercial, and industrial structures.

"Grounding" means connecting to the ground or to a conductive body that extends to ground connection.

B. If a home inspector observes the presence of any shade of yellow corrugated stainless steel tubing during a home inspection in a home that was built prior to the adoption of the 2006 Virginia Construction Code, effective May 1, 2008, he shall include that observation in the report along with the following statement: "Manufacturers believe that this product is safer if properly bonded and grounded as required by the manufacturer's installation instructions. Proper bonding and grounding of the product should be determined by a contractor licensed to perform the work in the Commonwealth of Virginia."

2017, c. 805.

15 USC 2646: Contractor and laboratory accreditation
Text contains those laws in effect on January 22, 2023

From Title 15-COMMERCE AND TRADE
CHAPTER 53-TOXIC SUBSTANCES CONTROL
SUBCHAPTER II-ASBESTOS HAZARD EMERGENCY RESPONSE
Jump To:

§2646. Contractor and laboratory accreditation

(a) Contractor accreditation

A person may not-

(1) inspect for asbestos-containing material in a school building under the authority of a local educational agency or in a public or commercial building,

(2) prepare a management plan for such a school, or

(3) design or conduct response actions, other than the type of action described in sections 2643(f) and 2644(c) of this title, with respect to friable asbestos-containing material in such a school or in a public or commercial building,

unless such person is accredited by a State under subsection (b) or is accredited pursuant to an Administrator-approved course under subsection (c).

(b) Accreditation by State

(1) Model plan

(A) Persons to be accredited

Within 180 days after October 22, 1986, the Administrator, in consultation with affected organizations, shall develop a model contractor accreditation plan for States to give accreditation to persons in the following categories:

(i) Persons who inspect for asbestos-containing material in school buildings under the authority of a local educational agency or in public or commercial buildings.

(ii) Persons who prepare management plans for such schools.

(iii) Persons who design or carry out response actions, other than the type of action described in sections 2643(f) and 2644(c) of this title, with respect to friable asbestos-containing material in such schools or in public or commercial buildings.

(B) Plan requirements

The plan shall include a requirement that any person in a category listed in paragraph (1) $\frac{1}{}$ achieve a passing grade on an examination and participate in continuing education to stay informed about current asbestos inspection and response action technology. The examination shall demonstrate the knowledge of the person in areas that the Administrator prescribes as necessary and appropriate in each of the categories. Such examinations may include requirements for knowledge in the following areas:

(i) Recognition of asbestos-containing material and its physical characteristics.

(ii) Health hazards of asbestos and the relationship between asbestos exposure and disease.

(iii) Assessing the risk of asbestos exposure through a knowledge of percentage weight of asbestos-containing material, friability, age, deterioration, location and accessibility of materials, and advantages and disadvantages of dry and wet response action methods.

(iv) Respirators and their use, care, selection, degree of protection afforded, fitting, testing, and maintenance and cleaning procedures.

(v) Appropriate work practices and control methods, including the use of high efficiency particle absolute vacuums, the use of amended water, and principles of negative air pressure equipment use and procedures.

(vi) Preparing a work area for response action work, including isolating work areas to prevent bystander or public exposure to asbestos, decontamination procedures, and procedures for dismantling work areas after completion of work.

(vii) Establishing emergency procedures to respond to sudden releases.

(viii) Air monitoring requirements and procedures.

(ix) Medical surveillance program requirements.

(x) Proper asbestos waste transportation and disposal procedures.

(xi) Housekeeping and personal hygiene practices, including the necessity of showers, and procedures to prevent asbestos exposure to an employee's family.

(2) State adoption of plan

Each State shall adopt a contractor accreditation plan at least as stringent as the model plan developed by the Administrator under paragraph (1), within 180 days after the commencement of the first regular session of the legislature of such State which is convened following the date on which the Administrator completes development of the model plan. In the case of a school operated under the defense dependents' education system provided for under the Defense Dependents' Education Act of 1978 (20 U.S.C. 921 et seq.), the Secretary of Defense shall adopt a contractor accreditation plan at least as stringent as that model.

(c) Accreditation by Administrator-approved course

(1) Course approval

Within 180 days after October 22, 1986, the Administrator shall ensure that any Environmental Protection Agency-approved asbestos training course is consistent with the model plan (including testing requirements) developed under subsection (b). A contractor may be accredited by taking and passing such a course.

(2) Treatment of persons with previous EPA asbestos training

A person who-

(A) completed an Environmental Protection Agency-approved asbestos training course before October 22, 1986, and

(B) passed (or passes) an asbestos test either before or after October 22, 1986,

may be accredited under paragraph (1) if the Administrator determines that the course and test are equivalent to the requirements of the model plan developed under subsection (b). If the Administrator so determines, the person shall be considered accredited for the purposes of this subchapter until a date that is one year after the date on which the State in which such person is employed establishes an accreditation program pursuant to subsection (b).

(3) Lists of courses

The Administrator, in consultation with affected organizations, shall publish (and revise as necessary)-

(A) a list of asbestos courses and tests in effect before October 22, 1986, which qualify for equivalency treatment under paragraph (2), and

(B) a list of asbestos courses and tests which the Administrator determines under paragraph (1) are consistent with the model plan and which will qualify a contractor for accreditation under such paragraph.

(d) Laboratory accreditation

(1) The Administrator shall provide for the development of an accreditation program for laboratories by the National Institute of Standards and Technology in accordance with paragraph (2). The Administrator shall transfer such funds as are necessary to the National Institute of Standards and Technology to carry out such program.

(2) The National Institute of Standards and Technology, upon request by the Administrator, shall, in consultation with affected organizations-

(A) within 360 days after October 22, 1986, develop an accreditation program for laboratories which conduct qualitative and semi-quantitative analyses of bulk samples of asbestos-containing material, and

(B) within 720 days after October 22, 1986, develop an accreditation program for laboratories which conduct analyses of air samples of asbestos from school buildings under the authority of a local educational agency.

(3) A laboratory which plans to carry out any such analysis shall comply with the requirements of the accreditation program.

(e) Financial assistance contingent on use of accredited persons

(1) A school which is an applicant for financial assistance under section 505 of the Asbestos School Hazard Abatement Act of 1984 [20 U.S.C. 4014] is not eligible for such assistance unless the school, in carrying out the requirements of this subchapter-

(A) uses a person (or persons)-

(i) who is accredited by a State which has adopted an accreditation plan based on the model plan developed under subsection (b), or

(ii) who is accredited pursuant to an Administrator-approved course under subsection (c), and

(B) uses a laboratory (or laboratories) which is accredited under the program developed under subsection (d).

(2) This subsection shall apply to any financial assistance provided under the Asbestos School Hazard Abatement Act of 1984 [20 U.S.C. 4011 et seq.] for activities performed after the following dates:

(A) In the case of activities performed by persons, after the date which is one year after October 22, 1986.

(B) In the case of activities performed by laboratories, after the date which is 180 days after the date on which a laboratory accreditation program is completed under subsection (d).

(f) List of EPA-approved courses

Not later than August 31, 1988, and every three months thereafter until August 31, 1991, the Administrator shall publish in the Federal Register a list of all Environmental Protection Agency-approved asbestos training courses for persons to achieve accreditation in each category described in subsection (b)(1)(A) and for laboratories to achieve accreditation. The Administrator may continue publishing such a list after August 31, 1991, at such times as the Administrator considers it useful. The list shall include the name and address of each approved trainer and, to the extent available, a list of all the geographic sites where training courses will take place. The Administrator shall provide a copy of the list to each State official on the list published by the Administrator under section 2645(d)(6) of this title and to each regional office of the Environmental Protection Agency.

(Pub. L. 94–469, title II, §206, as added Pub. L. 99–519, §2, Oct. 22, 1986, 100 Stat. 2980 ; amended Pub. L. 100–368, §3, July 18, 1988, 102 Stat. 832 ; Pub. L. 100–418, title V, §5115(c), Aug. 23, 1988, 102 Stat. 1433 ; Pub. L. 101–637, §15(a)(1), (2), Nov. 28, 1990, 104 Stat. 4596 .)

Editorial Notes

References in Text

The Defense Dependents' Education Act of 1978, referred to in subsec. (b)(2), is title XIV of Pub. L. 95–561, Nov. 1, 1978, 92 Stat. 2365 , which is classified principally to chapter 25A (§921 et seq.) of Title 20, Education. For complete classification of this Act to the Code, see Short Title note set out under section 921 of Title 20 and Tables.

The Asbestos School Hazard Abatement Act of 1984, referred to in subsec. (e)(2), is title V of Pub. L. 98–377, Aug. 11, 1984, 98 Stat. 1287 , as amended, which is classified generally to subchapter V (§4011 et seq.) of chapter 52 of Title 20. For complete classification of this Act to the Code, see Short Title note set out under section 4011 of Title 20 and Tables.

Amendments

1990-Subsec. (a)(1), (3). Pub. L. 101–637, §15(a)(1), inserted before comma at end "or in a public or commercial building".

Subsec. (b)(1)(A)(i), (iii). Pub. L. 101–637, §15(a)(2), inserted before period at end "or in public or commercial buildings".

1988-Subsec. (d)(1), (2). Pub. L. 100–418 substituted "National Institute of Standards and Technology" for "National Bureau of Standards" wherever appearing.

Subsec. (f). Pub. L. 100–368 added subsec. (f).

Statutory Notes and Related Subsidiaries

Effective Date of 1990 Amendment

Pub. L. 101–637, §15(c), Nov. 28, 1990, 104 Stat. 4597 , provided that: "This section [amending this section and section 2647 of this title and enacting provisions set out as notes under this section] shall take effect upon the expiration of the 12-month period following the date of the enactment of this Act [Nov. 28, 1990]. The Administrator may extend the effective date for a period not to exceed one year if the Administrator determines that accredited asbestos contractors are needed to perform school-site abatement required under the Asbestos Hazard Emergency Response Act [of 1986] (15 U.S.C. 2641) and such an extension is necessary to ensure effective implementation of section 203 of the Toxic Substances Control Act [15 U.S.C. 2643]."

Revision of Model Contractor Accreditation Program

Pub. L. 101–637, §15(a)(3), Nov. 28, 1990, 104 Stat. 4596 , provided that: "Not later than one year after the date of the enactment of this Act [Nov. 28, 1990], the Administrator of the Environmental Protection Agency shall revise the model contractor accreditation plan promulgated under section 206(b)(1) of the Toxic Substances Control Act (15 U.S.C. 2646(b)(1)) to increase the minimum number of hours of training, including additional hours of hands-on health and safety training, required for asbestos abatement workers and to make such other changes as may be necessary to implement the amendments made by paragraphs (1) and (2) [amending this section]."

EPA Administrator Not Exercising "Statutory Authority" Under OSHA Law in Exercising Authority Under This Chapter

Pub. L. 101–637, §15(b), Nov. 28, 1990, 104 Stat. 4596 , provided that: "In exercising any authority under the Toxic Substances Control Act [15 U.S.C. 2601 et seq.] in connection with the amendment made by

subsection (a) of this section [amending this section and section 2647 of this title], the Administrator of the Environmental Protection Agency shall not, for purposes of section 4(b)(1) of the Occupational Safety and Health Act of 1970 (29 U.S.C. 653(b)(1)), be considered to be exercising statutory authority to prescribe or enforce standards or regulations affecting occupational safety and health."

[1] *So in original. Probably should be "subparagraph (A)".*

Title 40 - Protection of Environment
Chapter I - Environmental Protection Agency
Subchapter C - Air Programs
Part 61 - National Emission Standards for Hazardous Air Pollutants

Authority: 42 U.S.C. 7401 *et seq.*

Source: 38 FR 8826, Apr. 6, 1973, unless otherwise noted.

Subpart M - National Emission Standard for Asbestos

Authority: 42 U.S.C. 7401, 7412, 7414, 7416, 7601.

Source: 49 FR 13661, Apr. 5, 1984, unless otherwise noted.

§ 61.140 Applicability.

The provisions of this subpart are applicable to those sources specified in §§ 61.142 through 61.151, 61.154, and 61.155.

[55 FR 48414, Nov. 20, 1990]

§ 61.141 Definitions.

All terms that are used in this subpart and are not defined below are given the same meaning as in the Act and in subpart A of this part.

Active waste disposal site means any disposal site other than an inactive site.

Adequately wet means sufficiently mix or penetrate with liquid to prevent the release of particulates. If visible emissions are observed coming from asbestos-containing material, then that material has not been adequately wetted. However, the absence of visible emissions is not sufficient evidence of being adequately wet.

Asbestos means the asbestiform varieties of serpentinite (chrysotile), riebeckite (crocidolite), cummingtonite-grunerite, anthophyllite, and actinolite-tremolite.

Asbestos-containing waste materials means mill tailings or any waste that contains commercial asbestos and is generated by a source subject to the provisions of this subpart. This term includes filters from control devices, friable asbestos waste material, and bags or other similar packaging contaminated with commercial asbestos. As applied to demolition and renovation operations, this term also includes regulated asbestos-containing material waste and materials contaminated with asbestos including disposable equipment and clothing.

Asbestos mill means any facility engaged in converting, or in any intermediate step in converting, asbestos ore into commercial asbestos. Outside storage of asbestos material is not considered a part of the asbestos mill.

Asbestos tailings means any solid waste that contains asbestos and is a product of asbestos mining or milling operations.

Asbestos waste from control devices means any waste material that contains asbestos and is collected by a pollution control device.

Category I nonfriable asbestos-containing material (ACM) means asbestos-containing packings, gaskets, resilient floor covering, and asphalt roofing products containing more than 1 percent asbestos as determined using the method specified in appendix E, subpart E, 40 CFR part 763, section 1, Polarized Light Microscopy.

Category II nonfriable ACM means any material, excluding Category I nonfriable ACM, containing more than 1 percent asbestos as determined using the methods specified in appendix E, subpart E, 40 CFR part 763, section 1, Polarized Light Microscopy that, when dry, cannot be crumbled, pulverized, or reduced to powder by hand pressure.

Commercial asbestos means any material containing asbestos that is extracted from ore and has value because of its asbestos content.

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

Demolition means 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.

Emergency renovation operation means a renovation operation that was not planned but results from a sudden, unexpected event that, if not immediately attended to, presents a safety or public health hazard, is necessary to protect equipment from damage, or is necessary to avoid imposing an unreasonable financial burden. This term includes operations necessitated by nonroutine failures of equipment.

Fabricating means any processing (*e.g.,* cutting, sawing, drilling) of a manufactured product that contains commercial asbestos, with the exception of processing at temporary sites (field fabricating) for the construction or restoration of facilities. In the case of friction products, fabricating includes bonding, debonding, grinding, sawing, drilling, or other similar operations performed as part of fabricating.

Facility means any institutional, commercial, public, industrial, or residential structure, installation, or building (including any structure, installation, or building containing condominiums or individual dwelling units operated as a residential cooperative, but excluding residential buildings having four or fewer dwelling units); any ship; and any active or inactive waste disposal site. For purposes of this definition, any building, structure, or installation that contains a loft used as a dwelling is not considered a residential structure, installation, or building. Any structure, installation or building that was previously subject to this subpart is not excluded, regardless of its current use or function.

Facility component means any part of a facility including equipment.

Friable asbestos material means any material containing more than 1 percent asbestos as determined using the method specified in appendix E, subpart E, 40 CFR part 763, section 1, Polarized Light Microscopy, that, when dry, can be crumbled, pulverized, or reduced to powder by hand pressure. If the asbestos content is less than 10 percent as determined by a method other than point counting by polarized light microscopy (PLM), verify the asbestos content by point counting using PLM.

Fugitive source means any source of emissions not controlled by an air pollution control device.

Glove bag means a sealed compartment with attached inner gloves used for the handling of asbestos-containing materials. Properly installed and used, glove bags provide a small work area enclosure typically used for small-scale asbestos stripping operations. Information on glove-bag installation, equipment and supplies, and work practices is contained in the Occupational Safety and Health Administration's (OSHA's) final rule on occupational exposure to asbestos (appendix G to 29 CFR 1926.58).

Grinding means to reduce to powder or small fragments and includes mechanical chipping or drilling.

In poor condition means the binding of the material is losing its integrity as indicated by peeling, cracking, or crumbling of the material.

Inactive waste disposal site means any disposal site or portion of it where additional asbestos-containing waste material has not been deposited within the past year.

Installation means any building or structure or any group of buildings or structures at a single demolition or renovation site that are under the control of the same owner or operator (or owner or operator under common control).

Leak-tight means that solids or liquids cannot escape or spill out. It also means dust-tight.

Malfunction means any sudden and unavoidable failure of air pollution control equipment or process equipment or of a process to operate in a normal or usual manner so that emissions of asbestos are increased. Failures of equipment shall not be considered malfunctions if they are caused in any way by poor maintenance, careless operation, or any other preventable upset conditions, equipment breakdown, or process failure.

Manufacturing means the combining of commercial asbestos - or, in the case of woven friction products, the combining of textiles containing commercial asbestos - with any other material(s), including commercial asbestos, and the processing of this combination into a product. Chlorine production is considered a part of manufacturing.

Natural barrier means a natural object that effectively precludes or deters access. Natural barriers include physical obstacles such as cliffs, lakes or other large bodies of water, deep and wide ravines, and mountains. Remoteness by itself is not a natural barrier.

Nonfriable asbestos-containing material means any material containing more than 1 percent asbestos as determined using the method specified in appendix E, subpart E, 40 CFR part 763, section 1, Polarized Light Microscopy, that, when dry, cannot be crumbled, pulverized, or reduced to powder by hand pressure.

Nonscheduled renovation operation means a renovation operation necessitated by the routine failure of equipment, which is expected to occur within a given period based on past operating experience, but for which an exact date cannot be predicted.

Outside air means the air outside buildings and structures, including, but not limited to, the air under a bridge or in an open air ferry dock.

Owner or operator of a demolition or renovation activity means any person who owns, leases, operates, controls, or supervises the facility being demolished or renovated or any person who owns, leases, operates, controls, or supervises the demolition or renovation operation, or both.

Particulate asbestos material means finely divided particles of asbestos or material containing asbestos.

Planned renovation operations means 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.

Regulated asbestos-containing material (RACM) means

(a) Friable asbestos material,

(b) Category I nonfriable ACM that has become friable,

(c) Category I nonfriable ACM that will be or has been subjected to sanding, grinding, cutting, or abrading, or

(d) Category II nonfriable 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 regulated by this subpart.

Remove means to take out RACM or facility components that contain or are covered with RACM from any facility.

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

Resilient floor covering means asbestos-containing floor tile, including asphalt and vinyl floor tile, and sheet vinyl floor covering containing more than 1 percent asbestos as determined using polarized light microscopy according to the method specified in appendix E, subpart E, 40 CFR part 763, section 1, Polarized Light Microscopy.

Roadways means surfaces on which vehicles travel. This term includes public and private highways, roads, streets, parking areas, and driveways.

Strip means to take off RACM from any part of a facility or facility components.

Structural member means any load-supporting member of a facility, such as beams and load supporting walls; or any nonload-supporting member, such as ceilings and nonload-supporting walls.

Visible emissions means any emissions, which are visually detectable without the aid of instruments, coming from RACM or asbestos-containing waste material, or from any asbestos milling, manufacturing, or fabricating operation. This does not include condensed, uncombined water vapor.

Waste generator means any owner or operator of a source covered by this subpart whose act or process produces asbestos-containing waste material.

Waste shipment record means the shipping document, required to be originated and signed by the waste generator, used to track and substantiate the disposition of asbestos-containing waste material.

Working day means Monday through Friday and includes holidays that fall on any of the days Monday through Friday.

[49 FR 13661, Apr. 5, 1984; 49 FR 25453, June 21, 1984, as amended by 55 FR 48414, Nov. 20, 1990; 56 FR 1669, Jan. 16, 1991; 60 FR 31920, June 19, 1995]

§ 61.142 Standard for asbestos mills.

(a) Each owner or operator of an asbestos mill shall either discharge no visible emissions to the outside air from that asbestos mill, including fugitive sources, or use the methods specified by § 61.152 to clean emissions containing particulate asbestos material before they escape to, or are vented to, the outside air.

(b) Each owner or operator of an asbestos mill shall meet the following requirements:

(1) Monitor each potential source of asbestos emissions from any part of the mill facility, including air cleaning devices, process equipment, and buildings that house equipment for material processing and handling, at least once each day, during daylight hours, for visible emissions to the outside air during periods of operation. The monitoring shall be by visual observation of at least 15 seconds duration per source of emissions.

(2) Inspect each air cleaning device at least once each week for proper operation and for changes that signal the potential for malfunction, including, to the maximum extent possible without dismantling other than opening the device, the presence of tears, holes, and abrasions in filter bags and for dust deposits on the clean side of bags. For air cleaning devices that cannot be inspected on a weekly basis according to this paragraph, submit to the Administrator, and revise as necessary, a written maintenance plan to include, at a minimum, the following:

(i) Maintenance schedule.

(ii) Recordkeeping plan.

(3) Maintain records of the results of visible emissions monitoring and air cleaning device inspections using a format similar to that shown in Figures 1 and 2 and include the following:

(i) Date and time of each inspection.

(ii) Presence or absence of visible emissions.

(iii) Condition of fabric filters, including presence of any tears, holes, and abrasions.

(iv) Presence of dust deposits on clean side of fabric filters.

(v) Brief description of corrective actions taken, including date and time.

(vi) Daily hours of operation for each air cleaning device.

(4) Furnish upon request, and make available at the affected facility during normal business hours for inspection by the Administrator, all records required under this section.

(5) Retain a copy of all monitoring and inspection records for at least 2 years.

(6) Submit semiannually a copy of visible emission monitoring records to the Administrator if visible emissions occurred during the report period. Semiannual reports shall be postmarked by the 30th day following the end of the six-month period.

Date of inspection (mo/day/yr)	Time of inspection (a.m./p.m.)	Air cleaning device or fugitive source designation or number	Visible emissions observed (yes/no), corrective action taken	Daily operating hours	Inspector's initials

Figure 1. Record of Visible Emission Monitoring

1. Air cleaning device designation or number _____

2. Date of inspection _____ _____ _____ _____

3. Time of inspection _____ _____ _____ _____

4. Is air cleaning device operating properly (yes/no) _____ _____ _____ _____

5. Tears, holes, or abrasions in fabric filter (yes/no) _____ _____ _____ _____

6. Dust on clean side of fabric filters (yes/no) _____ _____ _____ _____

7. Other signs of malfunctions or potential malfunctions (yes/no) _____ _____ _____ _____

8. Describe other malfunctions or signs of potential malfunctions. _____

_____

_____

9. Describe corrective action(s) taken. _____

_____

_____

10. Date and time corrective action taken _____ _____ _____ _____

11. Inspected by

(Print/Type Name)	(Title)	(Signature)	(Date)

(Print/Type Name)	(Title)	(Signature)	(Date)

Figure 2. Air Cleaning Device Inspection Checklist

[55 FR 48416, Nov. 20, 1990, as amended at 64 FR 7467, Feb. 12, 1999]

§ 61.143 Standard for roadways.

No person may construct or maintain a roadway with asbestos tailings or asbestos-containing waste material on that roadway, unless, for asbestos tailings.

(a) It is a temporary roadway on an area of asbestos ore deposits (asbestos mine): or

(b) It is a temporary roadway at an active asbestos mill site and is encapsulated with a resinous or bituminous binder. The encapsulated road surface must be maintained at a minimum frequency of once per year to prevent dust emissions; or

(c) It is encapsulated in asphalt concrete meeting the specifications contained in section 401 of Standard Specifications for Construction of Roads and Bridges on Federal Highway Projects, FP-85, 1985, or their equivalent.

[55 FR 48419, Nov. 20, 1990; 56 FR 1669, Jan. 16, 1991]

§ 61.144 Standard for manufacturing.

(a) ***Applicability.*** This section applies to the following manufacturing operations using commercial asbestos.

(1) The manufacture of cloth, cord, wicks, tubing, tape, twine, rope, thread, yarn, roving, lap, or other textile materials.

(2) The manufacture of cement products.

(3) The manufacture of fireproofing and insulating materials.

(4) The manufacture of friction products.

(5) The manufacture of paper, millboard, and felt.

(6) The manufacture of floor tile.

(7) The manufacture of paints, coatings, caulks, adhesives, and sealants.

(8) The manufacture of plastics and rubber materials.

(9) The manufacture of chlorine utilizing asbestos diaphragm technology.

(10) The manufacture of shotgun shell wads.

(11) The manufacture of asphalt concrete.

(b) ***Standard.*** Each owner or operator of any of the manufacturing operations to which this section applies shall either:

(1) Discharge no visible emissions to the outside air from these operations or from any building or structure in which they are conducted or from any other fugitive sources; or

(2) Use the methods specified by § 61.152 to clean emissions from these operations containing particulate asbestos material before they escape to, or are vented to, the outside air.

(3) Monitor each potential source of asbestos emissions from any part of the manufacturing facility, including air cleaning devices, process equipment, and buildings housing material processing and handling equipment, at least once each day during daylight hours for visible emissions to the outside air during periods of operation. The monitoring shall be by visual observation of at least 15 seconds duration per source of emissions.

(4) Inspect each air cleaning device at least once each week for proper operation and for changes that signal the potential for malfunctions, including, to the maximum extent possible without dismantling other than opening the device, the presence of tears, holes, and abrasions in filter bags and for dust deposits on the clean side of bags. For air cleaning devices that cannot be inspected on a weekly basis according to this paragraph, submit to the Administrator, and revise as necessary, a written maintenance plan to include, at a minimum, the following:

(i) Maintenance schedule.

(ii) Recordkeeping plan.

(5) Maintain records of the results of visible emission monitoring and air cleaning device inspections using a format similar to that shown in Figures 1 and 2 and include the following.

(i) Date and time of each inspection.

(ii) Presence or absence of visible emissions.

(iii) Condition of fabric filters, including presence of any tears, holes and abrasions.

(iv) Presence of dust deposits on clean side of fabric filters.

(v) Brief description of corrective actions taken, including date and time.

(vi) Daily hours of operation for each air cleaning device.

(6) Furnish upon request, and make available at the affected facility during normal business hours for inspection by the Administrator, all records required under this section.

(7) Retain a copy of all monitoring and inspection records for at least 2 years.

(8) Submit semiannually a copy of the visible emission monitoring records to the Administrator if visible emission occurred during the report period. Semiannual reports shall be postmarked by the 30th day following the end of the six-month period.

[49 FR 13661, Apr. 5, 1984, as amended at 55 FR 48419, Nov. 20, 1990; 56 FR 1669, Jan. 16, 1991; 64 FR 7467, Feb. 12, 1999]

§ 61.145 Standard for demolition and renovation.

(a) ***Applicability.*** To determine which requirements of paragraphs (a), (b), and (c) of this section apply to the owner or operator of a demolition or renovation activity and prior to the commencement of the demolition or renovation, thoroughly inspect the affected facility or part of the facility where the demolition or renovation operation will occur for the presence of asbestos, including Category I and Category II nonfriable ACM. The requirements of paragraphs (b) and (c) of this section apply to each owner or operator of a demolition or renovation activity, including the removal of RACM as follows:

(1) In a facility being demolished, all the requirements of paragraphs (b) and (c) of this section apply, except as provided in paragraph (a)(3) of this section, if the combined amount of RACM is

(i) At least 80 linear meters (260 linear feet) on pipes or at least 15 square meters (160 square feet) on other facility components, or

(ii) At least 1 cubic meter (35 cubic feet) off facility components where the length or area could not be measured previously.

(2) In a facility being demolished, only the notification requirements of paragraphs (b)(1), (2), (3)(i) and (iv), and (4)(i) through (vii) and (4)(ix) and (xvi) of this section apply, if the combined amount of RACM is

(i) Less than 80 linear meters (260 linear feet) on pipes and less than 15 square meters (160 square feet) on other facility components, and

(ii) Less than one cubic meter (35 cubic feet) off facility components where the length or area could not be measured previously or there is no asbestos.

(3) If the facility is being demolished under an order of a State or local government agency, issued because the facility is structurally unsound and in danger of imminent collapse, only the requirements of paragraphs (b)(1), (b)(2), (b)(3)(iii), (b)(4) (except (b)(4)(viii)), (b)(5), and (c)(4) through (c)(9) of this section apply.

(4) In a facility being renovated, including any individual nonscheduled renovation operation, all the requirements of paragraphs (b) and (c) of this section apply if the combined amount of RACM to be stripped, removed, dislodged, cut, drilled, or similarly disturbed is

(i) At least 80 linear meters (260 linear feet) on pipes or at least 15 square meters (160 square feet) on other facility components, or

(ii) At least 1 cubic meter (35 cubic feet) off facility components where the length or area could not be measured previously.

(iii) To determine whether paragraph (a)(4) of this section applies to planned renovation operations involving individual nonscheduled operations, predict the combined additive amount of RACM to be removed or stripped during a calendar year of January 1 through December 31.

(iv) To determine whether paragraph (a)(4) of this section applies to emergency renovation operations, estimate the combined amount of RACM to be removed or stripped as a result of the sudden, unexpected event that necessitated the renovation.

(5) Owners or operators of demolition and renovation operations are exempt from the requirements of §§ 61.05(a), 61.07, and 61.09.

(b) ***Notification requirements.*** Each owner or operator of a demolition or renovation activity to which this section applies shall:

(1) Provide the Administrator with written notice of intention to demolish or renovate. Delivery of the notice by U.S. Postal Service, commercial delivery service, or hand delivery is acceptable.

(2) Update notice, as necessary, including when the amount of asbestos affected changes by at least 20 percent.

(3) Postmark or deliver the notice as follows:

(i) At least 10 working days before asbestos stripping or removal work or any other activity begins (such as site preparation that would break up, dislodge or similarly disturb asbestos material), if the operation is described in paragraphs (a) (1) and (4) (except (a)(4)(iii) and (a)(4)(iv)) of this section. If the operation is as described in paragraph (a)(2) of this section, notification is required 10 working days before demolition begins.

(ii) At least 10 working days before the end of the calendar year preceding the year for which notice is being given for renovations described in paragraph (a)(4)(iii) of this section.

(iii) As early as possible before, but not later than, the following working day if the operation is a demolition ordered according to paragraph (a)(3) of this section or, if the operation is a renovation described in paragraph (a)(4)(iv) of this section.

(iv) For asbestos stripping or removal work in a demolition or renovation operation, described in paragraphs (a) (1) and (4) (except (a)(4)(iii) and (a)(4)(iv)) of this section, and for a demolition described in paragraph (a)(2) of this section, that will begin on a date other than the one contained in the original notice, notice of the new start date must be provided to the Administrator as follows:

(A) When the asbestos stripping or removal operation or demolition operation covered by this paragraph will begin after the date contained in the notice,

(*1*) Notify the Administrator of the new start date by telephone as soon as possible before the original start date, and

(*2*) Provide the Administrator with a written notice of the new start date as soon as possible before, and no later than, the original start date. Delivery of the updated notice by the U.S. Postal Service, commercial delivery service, or hand delivery is acceptable.

(B) When the asbestos stripping or removal operation or demolition operation covered by this paragraph will begin on a date earlier than the original start date,

(*1*) Provide the Administrator with a written notice of the new start date at least 10 working days before asbestos stripping or removal work begins.

(*2*) For demolitions covered by paragraph (a)(2) of this section, provide the Administrator written notice of a new start date at least 10 working days before commencement of demolition. Delivery of updated notice by U.S. Postal Service, commercial delivery service, or hand delivery is acceptable.

(C) In no event shall an operation covered by this paragraph begin on a date other than the date contained in the written notice of the new start date.

(4) Include the following in the notice:

(i) An indication of whether the notice is the original or a revised notification.

(ii) Name, address, and telephone number of both the facility owner and operator and the asbestos removal contractor owner or operator.

(iii) Type of operation: demolition or renovation.

(iv) Description of the facility or affected part of the facility including the size (square meters [square feet] and number of floors), age, and present and prior use of the facility.

(v) Procedure, including analytical methods, employed to detect the presence of RACM and Category I and Category II nonfriable ACM.

(vi) Estimate of the approximate amount of RACM to be removed from the facility in terms of length of pipe in linear meters (linear feet), surface area in square meters (square feet) on other facility components, or volume in cubic meters (cubic feet) if off the facility components. Also, estimate the approximate amount of Category I and Category II nonfriable ACM in the affected part of the facility that will not be removed before demolition.

(vii) Location and street address (including building number or name and floor or room number, if appropriate), city, county, and state, of the facility being demolished or renovated.

(viii) Scheduled starting and completion dates of asbestos removal work (or any other activity, such as site preparation that would break up, dislodge, or similarly disturb asbestos material) in a demolition or renovation; planned renovation operations involving individual nonscheduled operations shall only include the beginning and ending dates of the report period as described in paragraph (a)(4)(iii) of this section.

(ix) Scheduled starting and completion dates of demolition or renovation.

(x) Description of planned demolition or renovation work to be performed and method(s) to be employed, including demolition or renovation techniques to be used and description of affected facility components.

(xi) Description of work practices and engineering controls to be used to comply with the requirements of this subpart, including asbestos removal and waste-handling emission control procedures.

(xii) Name and location of the waste disposal site where the asbestos-containing waste material will be deposited.

(xiii) A certification that at least one person trained as required by paragraph (c)(8) of this section will supervise the stripping and removal described by this notification. This requirement shall become effective 1 year after promulgation of this regulation.

(xiv) For facilities described in paragraph (a)(3) of this section, the name, title, and authority of the State or local government representative who has ordered the demolition, the date that the order was issued, and the date on which the demolition was ordered to begin. A copy of the order shall be attached to the notification.

(xv) For emergency renovations described in paragraph (a)(4)(iv) of this section, the date and hour that the emergency occurred, a description of the sudden, unexpected event, and an explanation of how the event caused an unsafe condition, or would cause equipment damage or an unreasonable financial burden.

(xvi) Description of procedures to be followed in the event that unexpected RACM is found or Category II nonfriable ACM becomes crumbled, pulverized, or reduced to powder.

(xvii) Name, address, and telephone number of the waste transporter.

(5) The information required in paragraph (b)(4) of this section must be reported using a form similiar to that shown in Figure 3.

(c) ***Procedures for asbestos emission control.*** Each owner or operator of a demolition or renovation activity to whom this paragraph applies, according to paragraph (a) of this section, shall comply with the following procedures:

(1) Remove all RACM from a facility being demolished or renovated before any activity begins that would break up, dislodge, or similarly disturb the material or preclude access to the material for subsequent removal. RACM need not be removed before demolition if:

(i) It is Category I nonfriable ACM that is not in poor condition and is not friable.

(ii) It is on a facility component that is encased in concrete or other similarly hard material and is adequately wet whenever exposed during demolition; or

(iii) It was not accessible for testing and was, therefore, not discovered until after demolition began and, as a result of the demolition, the material cannot be safely removed. If not removed for safety reasons, the exposed RACM and any asbestos-contaminated debris must be treated as asbestos-containing waste material and adequately wet at all times until disposed of.

(iv) They are Category II nonfriable ACM and the probability is low that the materials will become crumbled, pulverized, or reduced to powder during demolition.

(2) When a facility component that contains, is covered with, or is coated with RACM is being taken out of the facility as a unit or in sections:

(i) Adequately wet all RACM exposed during cutting or disjoining operations; and

(ii) Carefully lower each unit or section to the floor and to ground level, not dropping, throwing, sliding, or otherwise damaging or disturbing the RACM.

(3) When RACM is stripped from a facility component while it remains in place in the facility, adequately wet the RACM during the stripping operation.

(i) In renovation operations, wetting is not required if:

(A) The owner or operator has obtained prior written approval from the Administrator based on a written application that wetting to comply with this paragraph would unavoidably damage equipment or present a safety hazard; and

(B) The owner or operator uses of the following emission control methods:

(*1*) A local exhaust ventilation and collection system designed and operated to capture the particulate asbestos material produced by the stripping and removal of the asbestos materials. The system must exhibit no visible emissions to the outside air or be designed and operated in accordance with the requirements in § 61.152.

(*2*) A glove-bag system designed and operated to contain the particulate asbestos material produced by the stripping of the asbestos materials.

(*3*) Leak-tight wrapping to contain all RACM prior to dismantlement.

(ii) In renovation operations where wetting would result in equipment damage or a safety hazard, and the methods allowed in paragraph (c)(3)(i) of this section cannot be used, another method may be used after obtaining written approval from the Administrator based upon a determination that it is equivalent to wetting in controlling emissions or to the methods allowed in paragraph (c)(3)(i) of this section.

(iii) A copy of the Administrator's written approval shall be kept at the worksite and made available for inspection.

(4) After a facility component covered with, coated with, or containing RACM has been taken out of the facility as a unit or in sections pursuant to paragraph (c)(2) of this section, it shall be stripped or contained in leak-tight wrapping, except as described in paragraph (c)(5) of this section. If stripped, either:

(i) Adequately wet the RACM during stripping; or

(ii) Use a local exhaust ventilation and collection system designed and operated to capture the particulate asbestos material produced by the stripping. The system must exhibit no visible emissions to the outside air or be designed and operated in accordance with the requirements in § 61.152.

(5) For large facility components such as reactor vessels, large tanks, and steam generators, but not beams (which must be handled in accordance with paragraphs (c)(2), (3), and (4) of this section), the RACM is not required to be stripped if the following requirements are met:

(i) The component is removed, transported, stored, disposed of, or reused without disturbing or damaging the RACM.

(ii) The component is encased in a leak-tight wrapping.

(iii) The leak-tight wrapping is labeled according to § 61.149(d)(1)(i), (ii), and (iii) during all loading and unloading operations and during storage.

(6) For all RACM, including material that has been removed or stripped:

(i) Adequately wet the material and ensure that it remains wet until collected and contained or treated in preparation for disposal in accordance with § 61.150; and

(ii) Carefully lower the material to the ground and floor, not dropping, throwing, sliding, or otherwise damaging or disturbing the material.

(iii) Transport the material to the ground via leak-tight chutes or containers if it has been removed or stripped more than 50 feet above ground level and was not removed as units or in sections.

(iv) RACM contained in leak-tight wrapping that has been removed in accordance with paragraphs (c)(4) and (c)(3)(i)(B)(*3*) of this section need not be wetted.

(7) When the temperature at the point of wetting is below 0 °C (32 °F):

(i) The owner or operator need not comply with paragraph (c)(2)(i) and the wetting provisions of paragraph (c)(3) of this section.

(ii) The owner or operator shall remove facility components containing, coated with, or covered with RACM as units or in sections to the maximum extent possible.

(iii) During periods when wetting operations are suspended due to freezing temperatures, the owner or operator must record the temperature in the area containing the facility components at the beginning, middle, and end of each workday and keep daily temperature records available for inspection by the Administrator during normal business hours at the demolition or renovation site. The owner or operator shall retain the temperature records for at least 2 years.

(8) Effective 1 year after promulgation of this regulation, no RACM shall be stripped, removed, or otherwise handled or disturbed at a facility regulated by this section unless at least one on-site representative, such as a foreman or management-level person or other authorized representative, trained in the provisions of this regulation and the means of complying with them, is present. Every 2 years, the trained on-site individual shall receive refresher training in the provisions of this regulation. The required training shall include as a minimum: applicability; notifications; material identification; control procedures for removals including, at least, wetting, local exhaust ventilation, negative pressure enclosures, glove-bag procedures, and High Efficiency Particulate Air (HEPA) filters; waste disposal work practices; reporting and recordkeeping; and asbestos hazards and worker protection. Evidence that the required training has been completed shall be posted and made available for inspection by the Administrator at the demolition or renovation site.

(9) For facilities described in paragraph (a)(3) of this section, adequately wet the portion of the facility that contains RACM during the wrecking operation.

(10) If a facility is demolished by intentional burning, all RACM including Category I and Category II nonfriable ACM must be removed in accordance with the NESHAP before burning.

NOTIFICATION OF DEMOLITION AND RENOVATION

Operator Project #	Postmark	Date Received	Notification #

I. TYPE OF NOTIFICATION (O=Original R=Revised C=Cancelled):

II. FACILITY INFORMATION (Identify owner, removal contractor, and other operator)

OWNER NAME:		
Address:		
City:	State:	Zip:
Contact:		Tel:
REMOVAL CONTRACTOR:		
Address:		
City:	State:	Zip:
Contact:		Tel:
OTHER OPERATOR:		
Address:		
City:	State:	Zip:
Contact:		Tel:

III. TYPE OF OPERATION (D=Demo O=Ordered Demo R=Renovation E=Emer.Renovation):

IV. IS ASBESTOS PRESENT? (Yes/No)

V. FACILITY DESCRIPTION (Include building name, number and floor or room number)

Bldg Name:		
Address:		
City:	State:	County:
Site Location:		
Building Size:	# of Floors:	Age in Years:
Present Use:	Prior Use:	

VI. PROCEDURE, INCLUDING ANALYTICAL METHOD, IF APPROPRIATE, USED TO DETECT THE PRESENCE OF ASBESTOS MATERIAL:

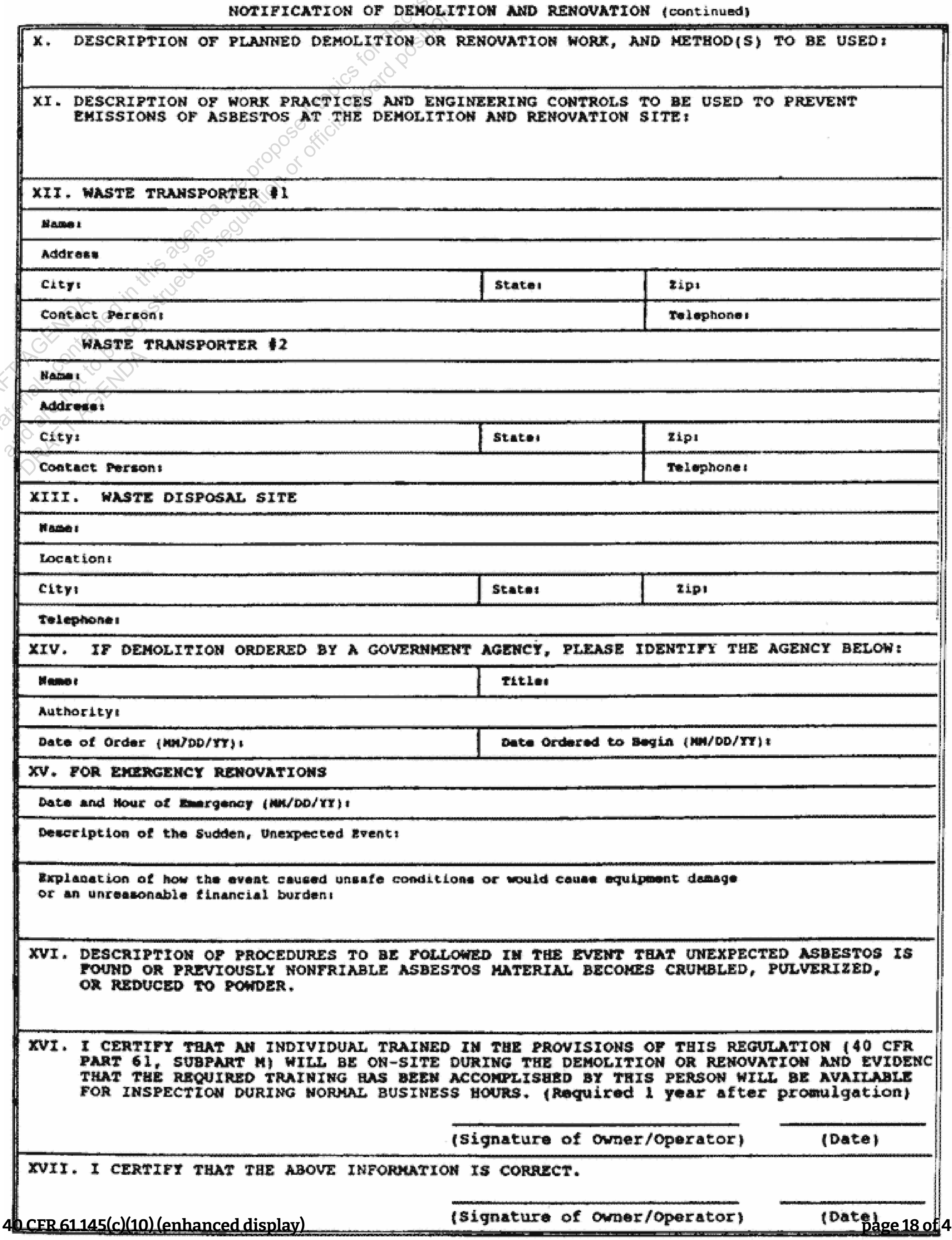
VII. APPROXIMATE AMOUNT OF ASBESTOS, INCLUDING: 1. Regulated ACM to be removed 2. Category I ACM Not Removed 3. Category II ACM Not Removed	RACM To Be Removed	Nonfriable Asbestos Material Not To Be Removed		Indicate Unit of Measurement Below	
		Cat I	Cat II	UNIT	
Pipes				LnFt:	Ln m:
Surface Area				SqFt:	Sq m:
Vol RACM Off Facility Component				CuFt:	Cu m:

VIII. SCHEDULED DATES ASBESTOS REMOVAL (MM/DD/YY) Start: Complete:

IX. SCHEDULED DATES DEMO/RENOVATION (MM/DD/YY) Start: Complete:

Continued on page two

Figure 3. Notification of Demolition and Renovation



NOTIFICATION OF DEMOLITION AND RENOVATION (continued)

X. DESCRIPTION OF PLANNED DEMOLITION OR RENOVATION WORK, AND METHOD(S) TO BE USED:

XI. DESCRIPTION OF WORK PRACTICES AND ENGINEERING CONTROLS TO BE USED TO PREVENT EMISSIONS OF ASBESTOS AT THE DEMOLITION AND RENOVATION SITE:

XII. WASTE TRANSPORTER #1

Name:
Address
City: State: Zip:
Contact Person: Telephone:

WASTE TRANSPORTER #2

Name:
Address:
City: State: Zip:
Contact Person: Telephone:

XIII. WASTE DISPOSAL SITE

Name:
Location:
City: State: Zip:
Telephone:

XIV. IF DEMOLITION ORDERED BY A GOVERNMENT AGENCY, PLEASE IDENTIFY THE AGENCY BELOW:

Name: Title:
Authority:
Date of Order (MM/DD/YY): Date Ordered to Begin (MM/DD/YY):

XV. FOR EMERGENCY RENOVATIONS

Date and Hour of Emergency (MM/DD/YY):
Description of the Sudden, Unexpected Event:
Explanation of how the event caused unsafe conditions or would cause equipment damage or an unreasonable financial burden:

XVI. DESCRIPTION OF PROCEDURES TO BE FOLLOWED IN THE EVENT THAT UNEXPECTED ASBESTOS IS FOUND OR PREVIOUSLY NONFRIABLE ASBESTOS MATERIAL BECOMES CRUMBLED, PULVERIZED, OR REDUCED TO POWDER.

XVI. I CERTIFY THAT AN INDIVIDUAL TRAINED IN THE PROVISIONS OF THIS REGULATION (40 CFR PART 61, SUBPART M) WILL BE ON-SITE DURING THE DEMOLITION OR RENOVATION AND EVIDENC THAT THE REQUIRED TRAINING HAS BEEN ACCOMPLISHED BY THIS PERSON WILL BE AVAILABLE FOR INSPECTION DURING NORMAL BUSINESS HOURS. (Required 1 year after promulgation)

(Signature of Owner/Operator) (Date)

XVII. I CERTIFY THAT THE ABOVE INFORMATION IS CORRECT.

(Signature of Owner/Operator) (Date)

Figure 3. Notification of Demolition and Renovation

[55 FR 48419, Nov. 20, 1990; 56 FR 1669, Jan. 16, 1991]

§ 61.146 Standard for spraying.

The owner or operator of an operation in which asbestos-containing materials are spray applied shall comply with the following requirements:

(a) For spray-on application on buildings, structures, pipes, and conduits, do not use material containing more than 1 percent asbestos as determined using the method specified in appendix E, subpart E, 40 CFR part 763, section 1, Polarized Light Microscopy, except as provided in paragraph (c) of this section.

(b) For spray-on application of materials that contain more than 1 percent asbestos as determined using the method specified in appendix E, subpart E, 40 CFR part 763, section 1, Polarized Light Microscopy, on equipment and machinery, except as provided in paragraph (c) of this section:

(1) Notify the Administrator at least 20 days before beginning the spraying operation. Include the following information in the notice:

(i) Name and address of owner or operator.

(ii) Location of spraying operation.

(iii) Procedures to be followed to meet the requirements of this paragraph.

(2) Discharge no visible emissions to the outside air from spray-on application of the asbestos-containing material or use the methods specified by § 61.152 to clean emissions containing particulate asbestos material before they escape to, or are vented to, the outside air.

(c) The requirements of paragraphs (a) and (b) of this section do not apply to the spray-on application of materials where the asbestos fibers in the materials are encapsulated with a bituminous or resinous binder during spraying and the materials are not friable after drying.

(d) Owners or operators of sources subject to this paragraph are exempt from the requirements of §§ 61.05(a), 61.07 and 61.09.

[49 FR 13661, Apr. 5, 1984. Redesignated and amended at 55 FR 48424, Nov. 20, 1990; 60 FR 31920, June 19, 1995]

§ 61.147 Standard for fabricating.

(a) ***Applicability.*** This section applies to the following fabricating operations using commercial asbestos:

(1) The fabrication of cement building products.

(2) The fabrication of friction products, except those operations that primarily install asbestos friction materials on motor vehicles.

(3) The fabrication of cement or silicate board for ventilation hoods; ovens; electrical panels; laboratory furniture, bulkheads, partitions, and ceilings for marine construction; and flow control devices for the molten metal industry.

(b) ***Standard.*** Each owner or operator of any of the fabricating operations to which this section applies shall either:

(1) Discharge no visible emissions to the outside air from any of the operations or from any building or structure in which they are conducted or from any other fugitive sources; or

(2) Use the methods specified by § 61.152 to clean emissions containing particulate asbestos material before they escape to, or are vented to, the outside air.

(3) Monitor each potential source of asbestos emissions from any part of the fabricating facility, including air cleaning devices, process equipment, and buildings that house equipment for material processing and handling, at least once each day, during daylight hours, for visible emissions to the outside air during periods of operation. The monitoring shall be by visual observation of at least 15 seconds duration per source of emissions.

(4) Inspect each air cleaning device at least once each week for proper operation and for changes that signal the potential for malfunctions, including, to the maximum extent possible without dismantling other than opening the device, the presence of tears, holes, and abrasions in filter bags and for dust deposits on the clean side of bags. For air cleaning devices that cannot be inspected on a weekly basis according to this paragraph, submit to the Administrator, and revise as necessary, a written maintenance plan to include, at a minimum, the following:

(i) Maintenance schedule.

(ii) Recordkeeping plan.

(5) Maintain records of the results of visible emission monitoring and air cleaning device inspections using a format similar to that shown in Figures 1 and 2 and include the following:

(i) Date and time of each inspection.

(ii) Presence or absence of visible emissions.

(iii) Condition of fabric filters, including presence of any tears, holes, and abrasions.

(iv) Presence of dust deposits on clean side of fabric filters.

(v) Brief description of corrective actions taken, including date and time.

(vi) Daily hours of operation for each air cleaning device.

(6) Furnish upon request and make available at the affected facility during normal business hours for inspection by the Administrator, all records required under this section.

(7) Retain a copy of all monitoring and inspection records for at least 2 years.

(8) Submit semiannually a copy of the visible emission monitoring records to the Administrator if visible emission occurred during the report period. Semiannual reports shall be postmarked by the 30th day following the end of the six-month period.

[49 FR 13661, Apr. 5, 1984. Redesignated and amended at 55 FR 48424, Nov. 20, 1991; 64 FR 7467, Feb. 12, 1999]

§ 61.148 Standard for insulating materials.

No owner or operator of a facility may install or reinstall on a facility component any insulating materials that contain commercial asbestos if the materials are either molded and friable or wet-applied and friable after drying. The provisions of this section do not apply to spray-applied insulating materials regulated under § 61.146.

[55 FR 48424, Nov. 20, 1990]

§ 61.149 Standard for waste disposal for asbestos mills.

Each owner or operator of any source covered under the provisions of § 61.142 shall:

(a) Deposit all asbestos-containing waste material at a waste disposal site operated in accordance with the provisions of § 61.154; and

(b) Discharge no visible emissions to the outside air from the transfer of control device asbestos waste to the tailings conveyor, or use the methods specified by § 61.152 to clean emissions containing particulate asbestos material before they escape to, or are vented to, the outside air. Dispose of the asbestos waste from control devices in accordance with § 61.150(a) or paragraph (c) of this section; and

(c) Discharge no visible emissions to the outside air during the collection, processing, packaging, or on-site transporting of any asbestos-containing waste material, or use one of the disposal methods specified in paragraphs (c) (1) or (2) of this section, as follows:

(1) Use a wetting agent as follows:

(i) Adequately mix all asbestos-containing waste material with a wetting agent recommended by the manufacturer of the agent to effectively wet dust and tailings, before depositing the material at a waste disposal site. Use the agent as recommended for the particular dust by the manufacturer of the agent.

(ii) Discharge no visible emissions to the outside air from the wetting operation or use the methods specified by § 61.152 to clean emissions containing particulate asbestos material before they escape to, or are vented to, the outside air.

(iii) Wetting may be suspended when the ambient temperature at the waste disposal site is less than −9.5 °C (15 °F), as determined by an appropriate measurement method with an accuracy of ±1 °C (±2 °F). During periods when wetting operations are suspended, the temperature must be recorded at least at hourly intervals, and records must be retained for at least 2 years in a form suitable for inspection.

(2) Use an alternative emission control and waste treatment method that has received prior written approval by the Administrator. To obtain approval for an alternative method, a written application must be submitted to the Administrator demonstrating that the following criteria are met:

(i) The alternative method will control asbestos emissions equivalent to currently required methods.

(ii) The suitability of the alternative method for the intended application.

(iii) The alternative method will not violate other regulations.

(iv) The alternative method will not result in increased water pollution, land pollution, or occupational hazards.

(d) When waste is transported by vehicle to a disposal site:

(1) Mark vehicles used to transport asbestos-containing waste material during the loading and unloading of the waste so that the signs are visible. The markings must:

(i) Be displayed in such a manner and location that a person can easily read the legend.

(ii) Conform to the requirements for 51 cm × 36 cm (20 in × 14 in) upright format signs specified in 29 CFR 1910.145(d)(4) and this paragraph; and

(iii) Display the following legend in the lower panel with letter sizes and styles of a visibility at least equal to those specified in this paragraph.

LEGEND

DANGER

ASBESTOS DUST HAZARD

CANCER AND LUNG DISEASE HAZARD

AUTHORIZED PERSONNEL ONLY

NOTATION

2.5 CM (1 INCH) SANS SERIF, GOTHIC OR BLOCK

2.5 CM (1 INCH) SANS SERIF, GOTHIC OR BLOCK

1.9 CM (3/4 INCH) SANS SERIF, GOTHIC OR BLOCK

14 POINT GOTHIC

Spacing between any two lines must be a least equal to the height of the upper of the two lines.

(2) For off-site disposal, provide a copy of the waste shipment record, described in paragraph (e)(1) of this section, to the disposal site owner or operator at the same time as the asbestos-containing waste material is delivered to the disposal site.

(e) For all asbestos-containing waste material transported off the facility site:

(1) Maintain asbestos waste shipment records, using a form similar to that shown in Figure 4, and include the following information:

(i) The name, address, and telephone number of the waste generator.

(ii) The name and address of the local, State, or EPA Regional agency responsible for administering the asbestos NESHAP program.

(iii) The quantity of the asbestos-containing waste material in cubic meters (cubic yards).

(iv) The name and telephone number of the disposal site operator.

(v) The name and physical site location of the disposal site.

(vi) The date transported.

(vii) The name, address, and telephone number of the transporter(s).

(viii) A certification that the contents of this consignment are fully and accurately described by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and government regulations.

(2) For waste shipments where a copy of the waste shipment record, signed by the owner or operator of the designated disposal site, is not received by the waste generator within 35 days of the date the waste was accepted by the initial transporter, contact the transporter and/or the owner or operator of the designated disposal site to determine the status of the waste shipment.

(3) Report in writing to the local, State, or EPA Regional office responsible for administering the asbestos NESHAP program for the waste generator if a copy of the waste shipment record, signed by the owner or operator of the designated waste disposal site, is not received by the waste generator within 45 days of the date the waste was accepted by the initial transporter. Include in the report the following information:

(i) A copy of the waste shipment record for which a confirmation of delivery was not received, and

(ii) A cover letter signed by the waste generator explaining the efforts taken to locate the asbestos waste shipment and the results of those efforts.

(4) Retain a copy of all waste shipment records, including a copy of the waste shipment record signed by the owner or operator of the designated waste disposal site, for at least 2 years.

(f) Furnish upon request, and make available for inspection by the Administrator, all records required under this section.

Generator	1. Work site name and mailing address	Owner's name	Owner's telephone no.
	2. Operator's name and address		Operator's telephone no.
	3. Waste disposal site (WDS) name, mailing address, and physical site location		WDS phone no.
	4. Name, and address of responsible agency		
	5. Description of materials	6. Containers No. Type	7. Total quantity m^3 (yd^3)
	8. Special handling instructions and additional information		
	9. OPERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and government regulations.		
	Printed/typed name & title	Signature	Month Day Year
Transporter	10. Transporter 1 (Acknowledgment of receipt of materials)		
	Printed/typed name & title Address and telephone no.	Signature	Month Day Year
	11. Transporter 2 (Acknowledgment of receipt of materials)		
	Printed/typed name & title Address and telephone no.	Signature	Month Day Year
Disposal Site	12. Discrepancy indication space		
	13. Waste disposal site owner or operator: Certification of receipt of asbestos materials covered by this manifest except as noted in item 12.		
	Printed/typed name & title	Signature	Month Day Year

(Continued)

Figure 4. Waste Shipment Record

INSTRUCTIONS

Waste Generator Section (Items 1-9)

1. Enter the name of the facility at which asbestos waste is generated and the address where the facility is located. In the appropriate spaces, also enter the name of the owner of the facility and the owner's phone number.

2. If a demolition or renovation, enter the name and address of the company and authorized agent responsible for performing the asbestos removal. In the appropriate spaces, also enter the phone number of the operator.

3. Enter the name, address, and physical site location of the waste disposal site (WDS) that will be receiving the asbestos materials. In the appropriate spaces, also enter the phone number of the WDS. Enter "on-site" if the waste will be disposed of on the generator's property.

4. Provide the name and address of the local, State, or EPA Regional office responsible for administering the asbestos NESHAP program.

5. Indicate the types of asbestos waste materials generated. If from a demolition or renovation, indicate the amount of asbestos that is

   - Friable asbestos material
   - Nonfriable asbestos material

6. Enter the number of containers used to transport the asbestos materials listed in item 5. Also enter one of the following container codes used in transporting each type of asbestos material (specify any other type of container used if not listed below):

   DM - Metal drums, barrels
   DP - Plastic drums, barrels
   BA - 6 mil plastic bags or wrapping

7. Enter the quantities of each type of asbestos material removed in units of cubic meters (cubic yards).

8. Use this space to indicate special transportation, treatment, storage or disposal or Bill of Lading information. If an alternate waste disposal site is designated, note it here. Emergency response telephone numbers or similar information may be included here.

9. The authorized agent of the waste generator must read and then sign and date this certification. The date is the date of receipt by transporter.

NOTE: The waste generator must retain a copy of this form.

(continued)

Figure 4. Waste Shipment Record

Transporter Section (Items 10 & 11)

10. & 11. Enter name, address, and telephone number of each transporter used, if applicable. Print or type the full name and title of person accepting responsibility and acknowledging receipt of materials as listed on this waste shipment record for transport. Enter date of receipt and signature.

NOTE: The transporter must retain a copy of this form.

Disposal Site Section (Items 12 & 13)

12. The authorized representative of the WDS must note in this space any discrepancy between waste described on this manifest and waste actually received as well as any improperly enclosed or contained waste. Any rejected materials should be listed and destination of those materials provided. A site that converts asbestos-containing waste material to nonasbestos material is considered a WDS.

13. The signature (by hand) of the authorized WDS agent indicates acceptance and agreement with statements on this manifest except as noted in item 12. The date is the date of signature and receipt of shipment.

NOTE: The WDS must retain a completed copy of this form. The WDS must also send a completed copy to the operator listed in item 2.

Figure 4. Waste Shipment Record

§ 61.150 Standard for waste disposal for manufacturing, fabricating, demolition, renovation, and spraying operations.

Each owner or operator of any source covered under the provisions of §§ 61.144, 61.145, 61.146, and 61.147 shall comply with the following provisions:

(a) Discharge no visible emissions to the outside air during the collection, processing (including incineration), packaging, or transporting of any asbestos-containing waste material generated by the source, or use one of the emission control and waste treatment methods specified in paragraphs (a) (1) through (4) of this section.

(1) Adequately wet asbestos-containing waste material as follows:

(i) Mix control device asbestos waste to form a slurry; adequately wet other asbestos-containing waste material; and

(ii) Discharge no visible emissions to the outside air from collection, mixing, wetting, and handling operations, or use the methods specified by § 61.152 to clean emissions containing particulate asbestos material before they escape to, or are vented to, the outside air; and

(iii) After wetting, seal all asbestos-containing waste material in leak-tight containers while wet; or, for materials that will not fit into containers without additional breaking, put materials into leak-tight wrapping; and

(iv) Label the containers or wrapped materials specified in paragraph (a)(1)(iii) of this section using warning labels specified by Occupational Safety and Health Standards of the Department of Labor, Occupational Safety and Health Administration (OSHA) under 29 CFR 1910.1001(j)(4) or 1926.1101(k)(8). The labels shall be printed in letters of sufficient size and contrast so as to be readily visible and legible.

(v) For asbestos-containing waste material to be transported off the facility site, label containers or wrapped materials with the name of the waste generator and the location at which the waste was generated.

(2) Process asbestos-containing waste material into nonfriable forms as follows:

(i) Form all asbestos-containing waste material into nonfriable pellets or other shapes;

(ii) Discharge no visible emissions to the outside air from collection and processing operations, including incineration, or use the method specified by § 61.152 to clean emissions containing particulate asbestos material before they escape to, or are vented to, the outside air.

(3) For facilities demolished where the RACM is not removed prior to demolition according to §§ 61.145(c)(1) (i), (ii), (iii), and (iv) or for facilities demolished according to § 61.145(c)(9), adequately wet asbestos-containing waste material at all times after demolition and keep wet during handling and loading for transport to a disposal site. Asbestos-containing waste materials covered by this paragraph do not have to be sealed in leak-tight containers or wrapping but may be transported and disposed of in bulk.

(4) Use an alternative emission control and waste treatment method that has received prior approval by the Administrator according to the procedure described in § 61.149(c)(2).

(5) As applied to demolition and renovation, the requirements of paragraph (a) of this section do not apply to Category I nonfriable ACM waste and Category II nonfriable ACM waste that did not become crumbled, pulverized, or reduced to powder.

(b) All asbestos-containing waste material shall be deposited as soon as is practical by the waste generator at:

(1) A waste disposal site operated in accordance with the provisions of § 61.154, or

(2) An EPA-approved site that converts RACM and asbestos-containing waste material into nonasbestos (asbestos-free) material according to the provisions of § 61.155.

(3) The requirements of paragraph (b) of this section do not apply to Category I nonfriable ACM that is not RACM.

(c) Mark vehicles used to transport asbestos-containing waste material during the loading and unloading of waste so that the signs are visible. The markings must conform to the requirements of §§ 61.149(d)(1) (i), (ii), and (iii).

(d) For all asbestos-containing waste material transported off the facility site:

(1) Maintain waste shipment records, using a form similar to that shown in Figure 4, and include the following information:

(i) The name, address, and telephone number of the waste generator.

(ii) The name and address of the local, State, or EPA Regional office responsible for administering the asbestos NESHAP program.

(iii) The approximate quantity in cubic meters (cubic yards).

(iv) The name and telephone number of the disposal site operator.

(v) The name and physical site location of the disposal site.

(vi) The date transported.

(vii) The name, address, and telephone number of the transporter(s).

(viii) A certification that the contents of this consignment are fully and accurately described by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and government regulations.

(2) Provide a copy of the waste shipment record, described in paragraph (d)(1) of this section, to the disposal site owners or operators at the same time as the asbestos-containing waste material is delivered to the disposal site.

(3) For waste shipments where a copy of the waste shipment record, signed by the owner or operator of the designated disposal site, is not received by the waste generator within 35 days of the date the waste was accepted by the initial transporter, contact the transporter and/or the owner or operator of the designated disposal site to determine the status of the waste shipment.

(4) Report in writing to the local, State, or EPA Regional office responsible for administering the asbestos NESHAP program for the waste generator if a copy of the waste shipment record, signed by the owner or operator of the designated waste disposal site, is not received by the waste generator within 45 days of the date the waste was accepted by the initial transporter. Include in the report the following information:

(i) A copy of the waste shipment record for which a confirmation of delivery was not received, and

(ii) A cover letter signed by the waste generator explaining the efforts taken to locate the asbestos waste shipment and the results of those efforts.

(5) Retain a copy of all waste shipment records, including a copy of the waste shipment record signed by the owner or operator of the designated waste disposal site, for at least 2 years.

(e) Furnish upon request, and make available for inspection by the Administrator, all records required under this section.

[55 FR 48429, Nov. 20, 1990; 56 FR 1669, Jan. 16, 1991, as amended at 68 FR 54793, Sept. 18, 2003]

§ 61.151 Standard for inactive waste disposal sites for asbestos mills and manufacturing and fabricating operations.

Each owner or operator of any inactive waste disposal site that was operated by sources covered under § 61.142, 61.144, or 61.147 and received deposits of asbestos-containing waste material generated by the sources, shall:

(a) Comply with one of the following:

(1) Either discharge no visible emissions to the outside air from an inactive waste disposal site subject to this paragraph; or

(2) Cover the asbestos-containing waste material with at least 15 centimeters (6 inches) of compacted nonasbestos-containing material, and grow and maintain a cover of vegetation on the area adequate to prevent exposure of the asbestos-containing waste material. In desert areas where vegetation would be difficult to maintain, at least 8 additional centimeters (3 inches) of well-graded, nonasbestos crushed rock may be placed on top of the final cover instead of vegetation and maintained to prevent emissions; or

(3) Cover the asbestos-containing waste material with at least 60 centimeters (2 feet) of compacted nonasbestos-containing material, and maintain it to prevent exposure of the asbestos-containing waste; or

(4) For inactive waste disposal sites for asbestos tailings, a resinous or petroleum-based dust suppression agent that effectively binds dust to control surface air emissions may be used instead of the methods in paragraphs (a) (1), (2), and (3) of this section. Use the agent in the manner and frequency recommended for the particular asbestos tailings by the manufacturer of the dust suppression agent to achieve and maintain dust control. Obtain prior written approval of the Administrator to use other equally effective dust suppression agents. For purposes of this paragraph, any used, spent, or other waste oil is not considered a dust suppression agent.

(b) Unless a natural barrier adequately deters access by the general public, install and maintain warning signs and fencing as follows, or comply with paragraph (a)(2) or (a)(3) of this section.

(1) Display warning signs at all entrances and at intervals of 100 m (328 ft) or less along the property line of the site or along the perimeter of the sections of the site where asbestos-containing waste material was deposited. The warning signs must:

(i) Be posted in such a manner and location that a person can easily read the legend; and

(ii) Conform to the requirements for 51 cm × 36 cm (20" × 14") upright format signs specified in 29 CFR 1910.145(d)(4) and this paragraph; and

(iii) Display the following legend in the lower panel with letter sizes and styles of a visibility at least equal to those specified in this paragraph.

Legend	Notation
Asbestos Waste Disposal Site	2.5 cm (1 inch) Sans Serif, Gothic or Block
Do Not Create Dust	1.9 cm ($^3/_4$ inch) Sans Serif, Gothic or Block
Breathing Asbestos is Hazardous to Your Health	14 Point Gothic.

Spacing between any two lines must be at least equal to the height of the upper of the two lines.

(2) Fence the perimeter of the site in a manner adequate to deter access by the general public.

(3) When requesting a determination on whether a natural barrier adequately deters public access, supply information enabling the Administrator to determine whether a fence or a natural barrier adequately deters access by the general public.

(c) The owner or operator may use an alternative control method that has received prior approval of the Administrator rather than comply with the requirements of paragraph (a) or (b) of this section.

(d) Notify the Administrator in writing at least 45 days prior to excavating or otherwise disturbing any asbestos-containing waste material that has been deposited at a waste disposal site under this section, and follow the procedures specified in the notification. If the excavation will begin on a date other than the one contained in the original notice, notice of the new start date must be provided to the Administrator at least 10 working days before excavation begins and in no event shall excavation begin earlier than the date specified in the original notification. Include the following information in the notice:

(1) Scheduled starting and completion dates.

(2) Reason for disturbing the waste.

(3) Procedures to be used to control emissions during the excavation, storage, transport, and ultimate disposal of the excavated asbestos-containing waste material. If deemed necessary, the Administrator may require changes in the emission control procedures to be used.

(4) Location of any temporary storage site and the final disposal site.

(e) Within 60 days of a site becoming inactive and after the effective date of this subpart, record, in accordance with State law, a notation on the deed to the facility property and on any other instrument that would normally be examined during a title search; this notation will in perpetuity notify any potential purchaser of the property that:

(1) The land has been used for the disposal of asbestos-containing waste material;

(2) The survey plot and record of the location and quantity of asbestos-containing waste disposed of within the disposal site required in § 61.154(f) have been filed with the Administrator; and

(3) The site is subject to 40 CFR part 61, subpart M.

[49 FR 13661, Apr. 5, 1984, as amended at 53 FR 36972, Sept. 23, 1988. Redesignated and amended at 55 FR 48429, Nov. 20, 1990]

§ 61.152 Air-cleaning.

(a) The owner or operator who uses air cleaning, as specified in §§ 61.142(a), 61.144(b)(2), 61.145(c)(3)(i)(B)(*1*), 61.145(c)(4)(ii), 61.145(c)(11)(i), 61.146(b)(2), 61.147(b)(2), 61.149(b), 61.149(c)(1)(ii), 61.150(a)(1)(ii), 61.150(a)(2)(ii), and 61.155(e) shall:

(1) Use fabric filter collection devices, except as noted in paragraph (b) of this section, doing all of the following:

(i) Ensuring that the airflow permeability, as determined by ASTM Method D737-75, does not exceed 9 $m^3/min/m^2$ (30 $ft^3/min/ft^2$) for woven fabrics or $11^3/min/m^2$(35 $ft^3/min/ft^2$) for felted fabrics, except that 12 $m^3/min/m^2$ (40 ft^3min/ft^2) for woven and 14 $m^3/min/m^2$ (45 ft^3min/ft^2) for felted fabrics is allowed for filtering air from asbestos ore dryers; and

(ii) Ensuring that felted fabric weighs at least 475 grams per square meter (14 ounces per square yard) and is at least 1.6 millimeters (one-sixteenth inch) thick throughout; and

(iii) Avoiding the use of synthetic fabrics that contain fill yarn other than that which is spun.

(2) Properly install, use, operate, and maintain all air-cleaning equipment authorized by this section. Bypass devices may be used only during upset or emergency conditions and then only for so long as it takes to shut down the operation generating the particulate asbestos material.

(3) For fabric filter collection devices installed after January 10, 1989, provide for easy inspection for faulty bags.

(b) There are the following exceptions to paragraph (a)(1):

(1) After January 10, 1989, if the use of fabric creates a fire or explosion hazard, or the Administrator determines that a fabric filter is not feasible, the Administrator may authorize as a substitute the use of wet collectors designed to operate with a unit contacting energy of at least 9.95 kilopascals (40 inches water gage pressure).

(2) Use a HEPA filter that is certified to be at least 99.97 percent efficient for 0.3 micron particles.

(3) The Administrator may authorize the use of filtering equipment other than described in paragraphs (a)(1) and (b)(1) and (2) of this section if the owner or operator demonstrates to the Administrator's satisfaction that it is equivalent to the described equipment in filtering particulate asbestos material.

[49 FR 13661, Apr. 5, 1984; 49 FR 25453, June 21, 1984, as amended at 51 FR 8199, Mar. 10, 1986. Redesignated and amended at 55 FR 48430, Nov. 20, 1990]

§ 61.153 Reporting.

(a) Any new source to which this subpart applies (with the exception of sources subject to §§ 61.143, 61.145, 61.146, and 61.148), which has an initial startup date preceding the effective date of this revision, shall provide the following information to the Administrator postmarked or delivered within 90 days of the effective date. In the case of a new source that does not have an initial startup date preceding the effective date, the information shall be provided, postmarked or delivered, within 90 days of the initial startup date. Any owner or operator of an existing source shall provide the following information to the Administrator within 90 days of the effective date of this subpart unless the owner or operator of the existing source has previously provided this information to the Administrator. Any changes in the information provided by any existing source shall be provided to the Administrator, postmarked or delivered, within 30 days after the change.

(1) A description of the emission control equipment used for each process; and

(i) If the fabric device uses a woven fabric, the airflow permeability in $m^3/min/m^2$ and; if the fabric is synthetic, whether the fill yarn is spun or not spun; and

(ii) If the fabric filter device uses a felted fabric, the density in g/m^2, the minimum thickness in inches, and the airflow permeability in $m^3/min/m^2$.

(2) If a fabric filter device is used to control emissions,

(i) The airflow permeability in $m^3/min/m^2$ ($ft^3/min/ft^2$) if the fabric filter device uses a woven fabric, and, if the fabric is synthetic, whether the fill yarn is spun or not spun; and

(ii) If the fabric filter device uses a felted fabric, the density in g/m^2 (oz/yd^2), the minimum thickness in millimeters (inches), and the airflow permeability in $m^3/min/m^2$ ($ft^3/min/ft^2$).

(3) If a HEPA filter is used to control emissions, the certified efficiency.

(4) For sources subject to §§ 61.149 and 61.150:

(i) A brief description of each process that generates asbestos-containing waste material; and

(ii) The average volume of asbestos-containing waste material disposed of, measured in m^3/day (yd^3/day); and

(iii) The emission control methods used in all stages of waste disposal; and

(iv) The type of disposal site or incineration site used for ultimate disposal, the name of the site operator, and the name and location of the disposal site.

(5) For sources subject to §§ 61.151 and 61.154:

(i) A brief description of the site; and

(ii) The method or methods used to comply with the standard, or alternative procedures to be used.

(b) The information required by paragraph (a) of this section must accompany the information required by § 61.10. Active waste disposal sites subject to § 61.154 shall also comply with this provision. Roadways, demolition and renovation, spraying, and insulating materials are exempted from the requirements of § 61.10(a). The information described in this section must be reported using the format of appendix A of this part as a guide.

(Sec. 114. Clean Air Act as amended (42 U.S.C. 7414))

[49 FR 13661, Apr. 5, 1984. Redesignated and amended at 55 FR 48430, Nov. 20, 1990; 56 FR 1669, Jan. 16, 1991]

§ 61.154 Standard for active waste disposal sites.

Each owner or operator of an active waste disposal site that receives asbestos-containing waste material from a source covered under § 61.149, 61.150, or 61.155 shall meet the requirements of this section:

(a) Either there must be no visible emissions to the outside air from any active waste disposal site where asbestos-containing waste material has been deposited, or the requirements of paragraph (c) or (d) of this section must be met.

(b) Unless a natural barrier adequately deters access by the general public, either warning signs and fencing must be installed and maintained as follows, or the requirements of paragraph (c)(1) of this section must be met.

(1) Warning signs must be displayed at all entrances and at intervals of 100 m (330 ft) or less along the property line of the site or along the perimeter of the sections of the site where asbestos-containing waste material is deposited. The warning signs must:

(i) Be posted in such a manner and location that a person can easily read the legend; and

(ii) Conform to the requirements of 51 cm × 36 cm (20" × 14") upright format signs specified in 29 CFR 1910.145(d)(4) and this paragraph; and

(iii) Display the following legend in the lower panel with letter sizes and styles of a visibility at least equal to those specified in this paragraph.

Legend	Notation
Asbestos Waste Disposal Site	2.5 cm (1 inch) Sans Serif, Gothic or Block.
Do Not Create Dust	1.9 cm ($^3/_4$ inch) Sans Serif, Gothic or Block.
Breathing Asbestos is Hazardous to Your Health	14 Point Gothic.

Spacing between any two lines must be at least equal to the height of the upper of the two lines.

(2) The perimeter of the disposal site must be fenced in a manner adequate to deter access by the general public.

(3) Upon request and supply of appropriate information, the Administrator will determine whether a fence or a natural barrier adequately deters access by the general public.

(c) Rather than meet the no visible emission requirement of paragraph (a) of this section, at the end of each operating day, or at least once every 24-hour period while the site is in continuous operation, the asbestos-containing waste material that has been deposited at the site during the operating day or previous 24-hour period shall:

(1) Be covered with at least 15 centimeters (6 inches) of compacted nonasbestos-containing material, or

(2) Be covered with a resinous or petroleum-based dust suppression agent that effectively binds dust and controls wind erosion. Such an agent shall be used in the manner and frequency recommended for the particular dust by the dust suppression agent manufacturer to achieve and maintain dust control. Other equally effective dust suppression agents may be used upon prior approval by the Administrator. For purposes of this paragraph, any used, spent, or other waste oil is not considered a dust suppression agent.

(d) Rather than meet the no visible emission requirement of paragraph (a) of this section, use an alternative emissions control method that has received prior written approval by the Administrator according to the procedures described in § 61.149(c)(2).

(e) For all asbestos-containing waste material received, the owner or operator of the active waste disposal site shall:

(1) Maintain waste shipment records, using a form similar to that shown in Figure 4, and include the following information:

(i) The name, address, and telephone number of the waste generator.

(ii) The name, address, and telephone number of the transporter(s).

(iii) The quantity of the asbestos-containing waste material in cubic meters (cubic yards).

(iv) The presence of improperly enclosed or uncovered waste, or any asbestos-containing waste material not sealed in leak-tight containers. Report in writing to the local, State, or EPA Regional office responsible for administering the asbestos NESHAP program for the waste generator (identified in the waste shipment record), and, if different, the local, State, or EPA Regional office

responsible for administering the asbestos NESHAP program for the disposal site, by the following working day, the presence of a significant amount of improperly enclosed or uncovered waste. Submit a copy of the waste shipment record along with the report.

(v) The date of the receipt.

(2) As soon as possible and no longer than 30 days after receipt of the waste, send a copy of the signed waste shipment record to the waste generator.

(3) Upon discovering a discrepancy between the quantity of waste designated on the waste shipment records and the quantity actually received, attempt to reconcile the discrepancy with the waste generator. If the discrepancy is not resolved within 15 days after receiving the waste, immediately report in writing to the local, State, or EPA Regional office responsible for administering the asbestos NESHAP program for the waste generator (identified in the waste shipment record), and, if different, the local, State, or EPA Regional office responsible for administering the asbestos NESHAP program for the disposal site. Describe the discrepancy and attempts to reconcile it, and submit a copy of the waste shipment record along with the report.

(4) Retain a copy of all records and reports required by this paragraph for at least 2 years.

(f) Maintain, until closure, records of the location, depth and area, and quantity in cubic meters (cubic yards) of asbestos-containing waste material within the disposal site on a map or diagram of the disposal area.

(g) Upon closure, comply with all the provisions of § 61.151.

(h) Submit to the Administrator, upon closure of the facility, a copy of records of asbestos waste disposal locations and quantities.

(i) Furnish upon request, and make available during normal business hours for inspection by the Administrator, all records required under this section.

(j) Notify the Administrator in writing at least 45 days prior to excavating or otherwise disturbing any asbestos-containing waste material that has been deposited at a waste disposal site and is covered. If the excavation will begin on a date other than the one contained in the original notice, notice of the new start date must be provided to the Administrator at least 10 working days before excavation begins and in no event shall excavation begin earlier than the date specified in the original notification. Include the following information in the notice:

(1) Scheduled starting and completion dates.

(2) Reason for disturbing the waste.

(3) Procedures to be used to control emissions during the excavation, storage, transport, and ultimate disposal of the excavated asbestos-containing waste material. If deemed necessary, the Administrator may require changes in the emission control procedures to be used.

(4) Location of any temporary storage site and the final disposal site.

(Secs. 112 and 301(a) of the Clean Air Act as amended (42 U.S.C. 7412, 7601(a))

[49 FR 13661, Apr. 5, 1990. Redesignated and amended at 55 FR 48431, Nov. 20, 1990; 56 FR 1669, Jan. 16, 1991]

§ 61.155 Standard for operations that convert asbestos-containing waste material into nonasbestos (asbestos-free) material.

Each owner or operator of an operation that converts RACM and asbestos-containing waste material into nonasbestos (asbestos-free) material shall:

(a) Obtain the prior written approval of the Administrator to construct the facility. To obtain approval, the owner or operator shall provide the Administrator with the following information:

(1) Application to construct pursuant to § 61.07.

(2) In addition to the information requirements of § 61.07(b)(3), a

(i) Description of waste feed handling and temporary storage.

(ii) Description of process operating conditions.

(iii) Description of the handling and temporary storage of the end product.

(iv) Description of the protocol to be followed when analyzing output materials by transmission electron microscopy.

(3) Performance test protocol, including provisions for obtaining information required under paragraph (b) of this section.

(4) The Administrator may require that a demonstration of the process be performed prior to approval of the application to construct.

(b) Conduct a start-up performance test. Test results shall include:

(1) A detailed description of the types and quantities of nonasbestos material, RACM, and asbestos-containing waste material processed, *e.g.,* asbestos cement products, friable asbestos insulation, plaster, wood, plastic, wire, etc. Test feed is to include the full range of materials that will be encountered in actual operation of the process.

(2) Results of analyses, using polarized light microscopy, that document the asbestos content of the wastes processed.

(3) Results of analyses, using transmission electron microscopy, that document that the output materials are free of asbestos. Samples for analysis are to be collected as 8-hour composite samples (one 200-gram (7-ounce) sample per hour), beginning with the initial introduction of RACM or asbestos-containing waste material and continuing until the end of the performance test.

(4) A description of operating parameters, such as temperature and residence time, defining the full range over which the process is expected to operate to produce nonasbestos (asbestos-free) materials. Specify the limits for each operating parameter within which the process will produce nonasbestos (asbestos-free) materials.

(5) The length of the test.

(c) During the initial 90 days of operation,

(1) Continuously monitor and log the operating parameters identified during start-up performance tests that are intended to ensure the production of nonasbestos (asbestos-free) output material.

(2) Monitor input materials to ensure that they are consistent with the test feed materials described during start-up performance tests in paragraph (b)(1) of this section.

(3) Collect and analyze samples, taken as 10-day composite samples (one 200-gram (7-ounce) sample collected every 8 hours of operation) of all output material for the presence of asbestos. Composite samples may be for fewer than 10 days. Transmission electron microscopy (TEM) shall be used to analyze the output material for the presence of asbestos. During the initial 90-day period, all output materials must be stored on-site until analysis shows the material to be asbestos-free or disposed of as asbestos-containing waste material according to § 61.150.

(d) After the initial 90 days of operation,

(1) Continuously monitor and record the operating parameters identified during start-up performance testing and any subsequent performance testing. Any output produced during a period of deviation from the range of operating conditions established to ensure the production of nonasbestos (asbestos-free) output materials shall be:

(i) Disposed of as asbestos-containing waste material according to § 61.150, or

(ii) Recycled as waste feed during process operation within the established range of operating conditions, or

(iii) Stored temporarily on-site in a leak-tight container until analyzed for asbestos content. Any product material that is not asbestos-free shall be either disposed of as asbestos-containing waste material or recycled as waste feed to the process.

(2) Collect and analyze monthly composite samples (one 200-gram (7-ounce) sample collected every 8 hours of operation) of the output material. Transmission electron microscopy shall be used to analyze the output material for the presence of asbestos.

(e) Discharge no visible emissions to the outside air from any part of the operation, or use the methods specified by § 61.152 to clean emissions containing particulate asbestos material before they escape to, or are vented to, the outside air.

(f) Maintain records on-site and include the following information:

(1) Results of start-up performance testing and all subsequent performance testing, including operating parameters, feed characteristic, and analyses of output materials.

(2) Results of the composite analyses required during the initial 90 days of operation under § 61.155(c).

(3) Results of the monthly composite analyses required under § 61.155(d).

(4) Results of continuous monitoring and logs of process operating parameters required under § 61.155 (c) and (d).

(5) The information on waste shipments received as required in § 61.154(e).

(6) For output materials where no analyses were performed to determine the presence of asbestos, record the name and location of the purchaser or disposal site to which the output materials were sold or deposited, and the date of sale or disposal.

(7) Retain records required by paragraph (f) of this section for at least 2 years.

(g) Submit the following reports to the Administrator:

(1) A report for each analysis of product composite samples performed during the initial 90 days of operation.

(2) A quarterly report, including the following information concerning activities during each consecutive 3-month period:

(i) Results of analyses of monthly product composite samples.

(ii) A description of any deviation from the operating parameters established during performance testing, the duration of the deviation, and steps taken to correct the deviation.

(iii) Disposition of any product produced during a period of deviation, including whether it was recycled, disposed of as asbestos-containing waste material, or stored temporarily on-site until analyzed for asbestos content.

(iv) The information on waste disposal activities as required in § 61.154(f).

(h) Nonasbestos (asbestos-free) output material is not subject to any of the provisions of this subpart. Output materials in which asbestos is detected, or output materials produced when the operating parameters deviated from those established during the start-up performance testing, unless shown by TEM analysis to be asbestos-free, shall be considered to be asbestos-containing waste and shall be handled and disposed of according to §§ 61.150 and 61.154 or reprocessed while all of the established operating parameters are being met.

[55 FR 48431, Nov. 20, 1990]

§ 61.156 Cross-reference to other asbestos regulations.

In addition to this subpart, the regulations referenced in Table 1 also apply to asbestos and may be applicable to those sources specified in §§ 61.142 through 61.151, 61.154, and 61.155 of this subpart. These cross-references are presented for the reader's information and to promote compliance with the cited regulations.

Table 1 - Cross-Reference to Other Asbestos Regulations

Agency	CFR citation	Comment
EPA	40 CFR part 763, subpart E	Requires schools to inspect for asbestos and implement response actions and submit asbestos management plans to States. Specifies use of accredited inspectors, air sampling methods, and waste disposal procedures.
	40 CFR part 427	Effluent standards for asbestos manufacturing source categories.
	40 CFR part 763, subpart G	Protects public employees performing asbestos abatement work in States not covered by OSHA asbestos standard.
OSHA	29 CFR 1910.1001	Worker protection measures-engineering controls, worker training, labeling, respiratory protection, bagging of waste, permissible exposure level.
	29 CFR 1926.1101	Worker protection measures for all construction work involving asbestos, including demolition and renovation-work practices, worker training, bagging of waste, permissible exposure level.
MSHA	30 CFR	Specifies exposure limits, engineering controls, and respiratory protection measures

Agency	CFR citation	Comment
	part 56, subpart D	for workers in surface mines.
	30 CFR part 57, subpart D	Specifies exposure limits, engineering controls, and respiratory protection measures for workers in underground mines.
DOT	49 CFR parts 171 and 172	Regulates the transportation of asbestos-containing waste material. Requires waste containment and shipping papers.

[55 FR 48432, Nov. 20, 1990, as amended at 60 FR 31920, June 19, 1995; 68 FR 54793, Sept. 18, 2003; 69 FR 43324, July 20, 2004]

§ 61.157 Delegation of authority.

(a) In delegating implementation and enforcement authority to a State under section 112(d) of the Act, the authorities contained in paragraph (b) of this section shall be retained by the Administrator and not transferred to a State.

(b) Authorities that will not be delegated to States:

(1) Section 61.149(c)(2)

(2) Section 61.150(a)(4)

(3) Section 61.151(c)

(4) Section 61.152(b)(3)

(5) Section 61.154(d)

(6) Section 61.155(a).

[55 FR 48433, Nov. 20, 1990]

Appendix A to Subpart M of Part 61 - Interpretive Rule Governing Roof Removal Operations

I. Applicability of the Asbestos NESHAP

1.1. Asbestos-containing material (ACM) is material containing more than one percent asbestos as determined using the methods specified in appendix E, subpart E, 40 CFR part 763, section 1, Polarized Light Microscopy. The NESHAP classifies ACM as either “friable” or “nonfriable”. Friable ACM is ACM that, when dry, can be crumbled, pulverized or reduced to powder by hand pressure. Nonfriable ACM is ACM that, when dry, cannot be crumbled, pulverized or reduced to powder by hand pressure.

1.2. Nonfriable ACM is further classified as either Category I ACM or Category II ACM. Category I ACM and Category II ACM are distinguished from each other by their potential to release fibers when damaged. Category I ACM includes asbestos-containing gaskets, packings, resilient floor coverings, resilient floor covering mastic, and asphalt roofing products containing more than one percent asbestos. Asphalt roofing products which may contain asbestos include built-up roofing; asphalt-containing single ply

membrane systems; asphalt shingles; asphalt-containing underlayment felts; asphalt-containing roof coatings and mastics; and asphalt-containing base flashings. ACM roofing products that use other bituminous or resinous binders (such as coal tars or pitches) are also considered to be Category I ACM. Category II ACM includes all other nonfriable ACM, for example, asbestos-cement (A/C) shingles, A/C tiles, and transite boards or panels containing more than one percent asbestos. Generally speaking, Category II ACM is more likely to become friable when damaged than is Category I ACM. The applicability of the NESHAP to Category I and II ACM depends on: (1) the condition of the material at the time of demolition or renovation, (2) the nature of the operation to which the material will be subjected, (3) the amount of ACM involved.

1.3. Asbestos-containing material regulated under the NESHAP is referred to as "regulated asbestos-containing material" (RACM). RACM is defined in § 61.141 of the NESHAP and includes: (1) friable asbestos-containing material; (2) Category I nonfriable ACM that has become friable; (3) Category I nonfriable ACM that has been or will be sanded, ground, cut, or abraded; or (4) Category II nonfriable ACM that has already been or is likely to become crumbled, pulverized, or reduced to powder. If the coverage threshold for RACM is met or exceeded in a renovation or demolition operation, then all friable ACM in the operation, and in certain situations, nonfriable ACM in the operation, are subject to the NESHAP.

A. Threshold Amounts of Asbestos-Containing Roofing Material

1.A.1. The NESHAP does not cover roofing projects on single family homes or on residential buildings containing four or fewer dwelling units. 40 CFR 61.141. For other roofing renovation projects, if the total asbestos-containing roof area undergoing renovation is less than 160 ft^2, the NESHAP does not apply, regardless of the removal method to be used, the type of material (Category I or II), or its condition (friable versus nonfriable). 40 CFR 61.145(a)(4). However, EPA would recommend the use of methods that damage asbestos-containing roofing material as little as possible. EPA has determined that where a rotating blade (RB) roof cutter or equipment that similarly damages the roofing material is used to remove Category I nonfriable asbestos-containing roofing material, the removal of 5580 ft^2 of that material will create 160 ft^2 of RACM. For the purposes of this interpretive rule, "RB roof cutter" means an engine-powered roof cutting machine with one or more rotating cutting blades the edges of which are blunt. (Equipment with blades having sharp or tapered edges, and/or which does not use a rotating blade, is used for "slicing" rather than "cutting" the roofing material; such equipment is not included in the term "RB roof cutter".) Therefore, it is EPA's interpretation that when an RB roof cutter or equipment that similarly damages the roofing material is used to remove Category I nonfriable asbestos-containing roofing material, any project that is 5580 ft^2 or greater is subject to the NESHAP; conversely, it is EPA's interpretation that when an RB roof cutter or equipment that similarly damages the roofing material is used to remove Category I nonfriable asbestos-containing roofing material in a roof removal project that is less than 5580 ft^2, the project is not subject to the NESHAP, except that notification is always required for demolitions. EPA further construes the NESHAP to mean that if slicing or other methods that do not sand, grind, cut or abrade will be used on Category I nonfriable ACM, the NESHAP does not apply, regardless of the area of roof to be removed.

1.A.2. For asbestos cement (A/C) shingles (or other Category II roofing material), if the area of the roofing material to be removed is at least 160 ft^2 and the removal methods will crumble, pulverize, reduce to powder, or contaminate with RACM (from other ACM that has been crumbled, pulverized or reduced to powder) 160 ft^2 or more of such roofing material, the removal is subject to the NESHAP. Conversely, if the area of the A/C shingles (or other Category II roofing materials) to be removed is

less than 160 ft^2, the removal is not subject to the NESHAP regardless of the removal method used, except that notification is always required for demolitions. 40 CFR 61.145(a). However, EPA would recommend the use of methods that damage asbestos-containing roofing material as little as possible. If A/C shingles (or other Category II roofing materials) are removed without 160 ft^2 or more of such roofing material being crumbled, pulverized, reduced to powder, or contaminated with RACM (from other ACM that has been crumbled, pulverized or reduced to powder), the operation is not subject to the NESHAP, even where the total area of the roofing material to be removed exceeds 160 ft^2; provided, however, that if the renovation includes other operations involving RACM, the roof removal operation is covered if the total area of RACM from all renovation activities exceeds 160 ft^2. *See* the definition of regulated asbestos-containing material (RACM), 40 CFR 61.141.

1.A.3. Only roofing material that meets the definition of ACM can qualify as RACM subject to the NESHAP. Therefore, to determine if a removal operation that meets or exceeds the coverage threshold is subject to the NESHAP, any suspect roofing material (*i.e.* roofing material that may be ACM) should be tested for asbestos. If any such roofing material contains more than one percent asbestos and if the removal operation is covered by the NESHAP, then EPA must be notified and the work practices in § 61.145(c) must be followed. In EPA's view, if a removal operation involves at least the threshold level of suspect material, a roofing contractor may choose not to test for asbestos if the contractor follows the notification and work practice requirements of the NESHAP.

B. A/C Shingle Removal (Category II ACM Removal)

1.B.1. A/C shingles, which are Category II nonfriable ACM, become regulated ACM if the material 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. 40 CFR 61.141. However, merely breaking an A/C shingle (or any other category II ACM) that is not friable may not necessarily cause the material to become RACM. A/C shingles are typically nailed to buildings on which they are attached. EPA believes that the extent of breakage that will normally result from carefully removing A/C shingles and lowering the shingles to the ground will not result in crumbling, pulverizing or reducing the shingles to powder. Conversely, the extent of breakage that will normally occur if the A/C shingles are dropped from a building or scraped off of a building with heavy machinery would cause the shingles to become RACM. EPA therefore construes the NESHAP to mean that the removal of A/C shingles that are not friable, using methods that do not crumble, pulverize, or reduce the A/C shingles to powder (such as pry bars, spud bars and shovels to carefully pry the material), is not subject to the NESHAP provided that the A/C shingles are properly handled during and after removal, as discussed in this paragraph and the asbestos NESHAP. This interpretation also applies to other Category II nonfriable asbestos-containing roofing materials.

C. Cutting vs. Slicing and Manual Methods for Removal of Category I ACM

1.C.1. Because of damage to the roofing material, and the potential for fiber release, roof removal operations using rotating blade (RB) roof cutters or other equipment that sand, grind, cut or abrade the roof material are subject to the NESHAP. As EPA interprets the NESHAP, the use of certain manual methods (using equipment such as axes, hatchets, or knives, spud bars, pry bars, and shovels, but not saws) or methods that slice, shear, or punch (using equipment such as a power slicer or power plow) does not constitute “cutting, sanding, grinding or abrading.” This is because these methods do not destroy the structural matrix or integrity of the material such that the material

is crumbled, pulverized or reduced to powder. Hence, it is EPA's interpretation that when such methods are used, assuming the roof material is not friable, the removal operation is not subject to the regulation.

1.C.2. Power removers or power tear-off machines are typically used to pry the roofing material up from the deck after the roof membrane has been cut. It is EPA's interpretation that when these machines are used to pry roofing material up, their use is not regulated by the NESHAP.

1. C.3. As noted previously, the NESHAP only applies to the removal of asbestos-containing roofing materials. Thus, the NESHAP does not apply to the use of RB cutters to remove non-asbestos built up roofing (BUR). On roofs containing some asbestos-containing and some non-asbestos-containing materials, coverage under the NESHAP depends on the methods used to remove each type of material in addition to other coverage thresholds specified above. For example, it is not uncommon for existing roofs to be made of non-asbestos BUR and base flashings that do contain asbestos. In that situation, EPA construes the NESHAP to be inapplicable to the removal of the non-asbestos BUR using an RB cutter so long as the RB cutter is not used to cut 5580 ft^2 or more of the asbestos-containing base flashing or other asbestos-containing material into sections. In addition, the use of methods that slice, shear, punch or pry could then be used to remove the asbestos flashings and not trigger coverage under the NESHAP.

II. Notification

2.1. Notification for a demolition is always required under the NESHAP. However, EPA believes that few roof removal jobs constitute “demolitions” as defined in the NESHAP (§ 61.141). In particular, it is EPA's view that the removal of roofing systems (i.e., the roof membrane, insulation, surfacing, coatings, flashings, mastic, shingles, and felt underlayment), when such removal is not a part of a demolition project, constitutes a “renovation” under the NESHAP. If the operation is a renovation, and Category I roofing material is being removed using either manual methods or slicing, notification is not required by the NESHAP. If Category II material is not friable and will be removed without crumbling, pulverizing, or reducing it to powder, no notification is required. Also, if the renovation involves less than the threshold area for applicability as discussed above, then no notification is required. However, if a roof removal meets the applicability and threshold requirements under the NESHAP, then EPA (or the delegated agency) must be notified in advance of the removal in accordance with the requirements of § 61.145(b), as follows:

• Notification must be given in writing at least 10 working days in advance and must include the information in § 61.145(b)(4), except for emergency renovations as discussed below.

• The notice must be updated as necessary, including, for example, when the amount of asbestos-containing roofing material reported changes by 20 percent or more.

• EPA must be notified if the start date of the roof removal changes. If the start date of a roof removal project is changed to an earlier date, EPA must be provided with a written notice of the new start date at least 10 working days in advance. If the start date changes to a later date, EPA must be notified by telephone as soon as possible before the original start date and a written notice must be sent as soon as possible.

• For emergency renovations (as defined in § 61.141), where work must begin immediately to avoid safety or public health hazards, equipment damage, or unreasonable financial burden, the notification must be postmarked or delivered to EPA as soon as possible, but no later than the following work day.

III. Emission Control Practices

A. Requirements To Adequately Wet and Discharge No Visible Emission

3.A.1. The principal controls contained in the NESHAP for removal operations include requirements that the affected material be adequately wetted, and that asbestos waste be handled, collected, and disposed of properly. The requirements for disposal of waste materials are discussed separately in section IV below. The emission control requirements discussed in this section III apply only to roof removal operations that are covered by the NESHAP as set forth in Section I above.

3.A.2. For any operation subject to the NESHAP, the regulation (§§ 61.145(c)(2)(i), (3), (6)(i)) requires that RACM be adequately wet (as defined in § 61.141) during the operation that damages or disturbs the asbestos material until collected for disposal.

3.A.3. When using an RB roof cutter (or any other method that sands, grinds, cuts or abrades the roofing material) to remove Category I asbestos-containing roofing material, the emission control requirements of § 61.145(c) apply as discussed in Section I above. EPA will consider a roof removal project to be in compliance with the “adequately wet” and “discharge no visible emission” requirements of the NESHAP if the RB roof cutter is equipped and operated with the following: (1) a blade guard that completely encloses the blade and extends down close to the roof surface; and (2) a device for spraying a fine mist of water inside the blade guard, and which device is in operation during the cutting of the roof.

B. Exemptions From Wetting Requirements

3.B.1. The NESHAP provides that, in certain instances, wetting may not be required during the cutting of Category I asbestos roofing material with an RB roof cutter. If EPA determines in accordance with § 61.145(c)(3)(i), that wetting will unavoidably damage the building, equipment inside the building, or will present a safety hazard while stripping the ACM from a facility component that remains in place, the roof removal operation will be exempted from the requirement to wet during cutting. EPA must have sufficient written information on which to base such a decision. Before proceeding with a dry removal, the contractor must have received EPA's written approval. Such exemptions will be made on a case-by-case basis.

3.B.2. It is EPA's view that, in most instances, exemptions from the wetting requirements are not necessary. Where EPA grants an exemption from wetting because of the potential for damage to the building, damage to equipment within the building or a safety hazard, the NESHAP specifies alternative control methods (§ 61.145(c)(3)(i)(B)). Alternative control methods include (a) the use of local exhaust ventilation systems that capture the dust, and do not produce visible emissions, or (b) methods that are designed and operated in accordance with the

requirements of § 61.152, or (c) other methods that have received the written approval of EPA. EPA will consider an alternative emission control method in compliance with the NESHAP if the method has received written approval from EPA and the method is being implemented consistent with the approved procedures (§ 61.145(c)(3)(ii) or § 61.152(b)(3)).

3.B.3. An exemption from wetting is also allowed when the air or roof surface temperature at the point of wetting is below freezing, as specified in § 61.145(c)(7). If freezing temperatures are indicated as the reason for not wetting, records must be kept of the temperature at the beginning, middle and end of the day on which wetting is not performed and the records of temperature must be retained for at least 2 years. 42 CFR § 61.145(c)(7)(iii). It is EPA's interpretation that in such cases, no written application to, or written approval by the Administrator is needed for using emission control methods listed in § 61.145(c)(3)(i)(B), or alternative emission control methods that have been previously approved by the Administrator. However, such written application or approval is required for alternative emission control methods that have not been previously approved. Any dust and debris collected from cutting must still be kept wet and placed in containers. All of the other requirements for notification and waste disposal would continue to apply as described elsewhere in this notice and the Asbestos NESHAP.

C. Waste Collection and Handling

3. C.1. It is EPA's interpretation that waste resulting from slicing and other methods that do not cut, grind, sand or abrade Category I nonfriable asbestos-containing roofing material is not subject to the NESHAP and can be disposed of as nonasbestos waste. EPA further construes the NESHAP to provide that if Category II roofing material (such as A/C shingles) is removed and disposed of without crumbling, pulverizing, or reducing it to powder, the waste from the removal is not subject to the NESHAP waste disposal requirements. EPA also interprets the NESHAP to be inapplicable to waste resulting from roof removal operations that do not meet or exceed the coverage thresholds described in section I above. Of course, other State, local, or Federal regulations may apply.

3. C.2. It is EPA's interpretation that when an RB roof cutter, or other method that similarly damages the roofing material, is used to cut Category I asbestos containing roofing material, the damaged material from the cut (the sawdust or debris) is considered asbestos containing waste subject to § 61.150 of the NESHAP, provided the coverage thresholds discussed above in section 1 are met or exceeded. This sawdust or debris must be disposed of at a disposal site operated in accordance with the NESHAP. It is also EPA's interpretation of the NESHAP that if the remainder of the roof is free of the sawdust and debris generated by the cutting, or if such sawdust or debris is collected as discussed below in paragraphs 3.C.3, 3.C.4, 3.C.5 and 3.C.6, the remainder of the roof can be disposed of as nonasbestos waste because it is considered to be Category I nonfriable material (as long as the remainder of the roof is in fact nonasbestos material or if it is Category I asbestos material and the removal methods do not further sand, grind, cut or abrade the roof material). EPA further believes that if the roof is not cleaned of such sawdust or debris, *i.e.,* it is contaminated, then it must be treated as asbestos-containing waste material and be handled in accordance with § 61.150.

3. C.3. In order to be in compliance with the NESHAP while using an RB roof cutter (or device that similarly damages the roofing material) to cut Category I asbestos containing roofing material, the dust and debris resulting from the cutting of the roof should be collected as soon as

possible after the cutting operation, and kept wet until collected and placed in leak-tight containers. EPA believes that where the blade guard completely encloses the blade and extends down close to the roof surface and is equipped with a device for spraying a fine mist of water inside the blade guard, and the spraying device is in operation during the cutting, most of the dust and debris from cutting will be confined along the cut. The most efficient methods to collect the dust and debris from cutting are to immediately collect or vacuum up the damaged material where it lies along the cut using a filtered vacuum cleaner or debris collector that meets the requirements of 40 CFR 61.152 to clean up as much of the debris as possible, or to gently sweep up the bulk of the debris, and then use a filtered vacuum cleaner that meets the requirements of 40 CFR 61.152 to clean up as much of the remainder of the debris as possible. On smooth surfaced roofs (nonaggregate roofs), sweeping up the debris and then wet wiping the surface may be done in place of using a filtered vacuum cleaner. It is EPA's view that if these decontamination procedures are followed, the remaining roofing material does not have to be collected and disposed of as asbestos waste. Additionally, it is EPA's view that where such decontamination procedures are followed, if the remaining portions of the roof are non-asbestos or Category I nonfriable asbestos material, and if the remaining portions are removed using removal methods that slice, shear, punch or pry, as discussed in section 1.C above, then the remaining portions do not have to be collected and disposed of as asbestos waste and the NESHAP's no visible emissions and adequately wet requirements are not applicable to the removal of the remaining portions. In EPA's interpretation, the failure of a filtered vacuum cleaner or debris collector to collect larger chunks or pieces of damaged roofing material created by the RB roof cutter does not require the remaining roofing material to be handled and disposed of as asbestos waste, provided that such visible chunks or pieces of roofing material are collected (e.g. by gentle sweeping) and disposed of as asbestos waste. Other methods of decontamination may not be adequate, and should be approved by the local delegated agency.

3. C.4. In EPA's interpretation, if the debris from the cutting is not collected immediately, it will be necessary to lightly mist the dust or debris, until it is collected, as discussed above, and placed in containers. The dust or debris should be lightly misted frequently enough to prevent the material from drying, and to prevent airborne emissions, prior to collection as described above. It is EPA's interpretation of the NESHAP that if these procedures are followed, the remaining roofing material does not have to be collected and disposed of as asbestos waste, as long as the remaining roof material is in fact nonasbestos material or if it is Category I asbestos material and the removal methods do not further sand, grind, cut or abrade the roof material.

3. C.

5. It is EPA's interpretation that, provided the roofing material is not friable prior to the cutting operation, and provided the roofing material has not been made friable by the cutting operation, the appearance of rough, jagged or damaged edges on the remaining roofing material, due to the use of an RB roof cutter, does not require that such remaining roofing material be handled and disposed of as asbestos waste. In addition, it is also EPA's interpretation that if the sawdust or debris generated by the use of an RB roof cutter has been collected as discussed in paragraphs 3.C.3, 3.C.4 and 3.C.6, the presence of dust along the edge of the remaining roof material does not render such material “friable” for purposes of this interpretive rule or the NESHAP, provided the roofing material is not friable prior to the cutting operation, and provided that the remaining roofing material near the cutline has not been made friable by the cutting operation. Where roofing material near the cutline has been made friable by the use of the RB cutter (*i.e.* where such remaining roofing material near the cutline can be crumbled, pulverized

or reduced to powder using hand pressure), it is EPA's interpretation that the use of an encapsulant will ensure that such friable material need not be treated or disposed of as asbestos containing waste material. The encapsulant may be applied to the friable material after the roofing material has been collected into stacks for subsequent disposal as nonasbestos waste. It is EPA's view that if the encapsulation procedure set forth in this paragraph is followed in operations where roofing material near the cutline has been rendered friable by the use of an RB roof cutter, and if the decontamination procedures set forth in paragraph 3.C.3 have been followed, the NESHAP's no visible emissions and adequately wet requirements would be met for the removal, handling and disposal of the remaining roofing material.

3.C.6. As one way to comply with the NESHAP, the dust and debris from cutting can be placed in leak-tight containers, such as plastic bags, and the containers labeled using warning labels required by OSHA (29 CFR 1926.58). In addition, the containers must have labels that identify the waste generator (such as the name of the roofing contractor, abatement contractor, and/or building owner or operator) and the location of the site at which the waste was generated.

IV. Waste Disposal

A. Disposal Requirements

4.A.1. Section 61.150(b) requires that, as soon as is practical, all collected dust and debris from cutting as well as any contaminated roofing squares, must be taken to a landfill that is operated in accordance with § 61.154 or to an EPA-approved site that converts asbestos waste to nonasbestos material in accordance with § 61.155. During the loading and unloading of affected waste, asbestos warning signs must be affixed to the vehicles.

B. Waste Shipment Record

4.B.1. For each load of asbestos waste that is regulated under the NESHAP, a waste shipment record (WSR) must be maintained in accordance with § 61.150(d). Information that must be maintained for each waste load includes the following:

• Name, address, and telephone number of the waste generator

• Name and address of the local, State, or EPA regional office responsible for administering the asbestos NESHAP program

• Quantity of waste in cubic meters (or cubic yards)

• Name and telephone number of the disposal site operator

• Name and physical site location of the disposal site

• Date transported

• Name, address, and telephone number of the transporter(s)

• Certification that the contents meet all government regulations for transport by highways.

4.B.2. The waste generator is responsible for ensuring that a copy of the WSR is delivered to the disposal site along with the waste shipment. If a copy of the WSR signed by the disposal site operator is not returned to the waste generator within 35 days, the waste generator must contact the transporter and/or the disposal site to determine the status of the waste shipment. 40 CFR 61.150(d)(3). If the signed WSR is not received within 45 days, the waste generator must report, in writing, to the responsible NESHAP program agency and send along a copy of the WSR. 40 CFR 61.150(d)(4). Copies of WSRs, including those signed by the disposal site operator, must be retained for at least 2 years. 40 CFR 61.150(d)(5).

V. Training

5.1. For those roof removals that are subject to the NESHAP, at least one on-site supervisor trained in the provisions of the NESHAP must be present during the removal of the asbestos roofing material. 40 CFR 61.145(c)(8). In EPA's view, this person can be a job foreman, a hired consultant, or someone who can represent the building owner or contractor responsible for the removal. In addition to the initial training requirement, a refresher training course is required every 2 years. The NESHAP training requirements became effective on November 20, 1991.

5.2. Asbestos training courses developed specifically to address compliance with the NESHAP in roofing work, as well as courses developed for other purposes can satisfy this requirement of the NESHAP, as long as the course covers the areas specified in the regulation. EPA believes that Asbestos Hazard Emergency Response Act (AHERA) training courses will, for example, satisfy the NESHAP training requirements. However, nothing in this interpretive rule or in the NESHAP shall be deemed to require that roofing contractors or roofing workers performing operations covered by the NESHAP must be trained or accredited under AHERA, as amended by the Asbestos School Hazard Abatement Reauthorization Act (ASHARA). Likewise, state or local authorities may independently impose additional training, licensing, or accreditation requirements on roofing contractors performing operations covered by the NESHAP, but such additional training, licensing or accreditation is not called for by this interpretive rule or the federal NESHAP.

5.3. For removal of Category I asbestos containing roofing material where RB roof cutters or equipment that similarly damages the asbestos-containing roofing material are used, the NESHAP training requirements (§ 61.145(c)(8)) apply as discussed in Section I above. It is EPA's intention that removal of Category I asbestos-containing roofing material using hatchets, axes, knives, and/or the use of spud bars, pry bars and shovels to lift the roofing material, or similar removal methods that slice, punch, or shear the roof membrane are not subject to the training requirements, since these methods do not cause the roof removal to be subject to the NESHAP. Likewise, it is EPA's intention that roof removal operations involving Category II nonfriable ACM are not subject to the training requirements where such operations are not subject to the NESHAP as discussed in section I above.

[59 FR 31158, June 17, 1994, as amended at 60 FR 31920, June 19, 1995]

Title 40 - Protection of Environment
Chapter I - Environmental Protection Agency
Subchapter R - Toxic Substances Control Act

PART 763 - ASBESTOS

Authority: 15 U.S.C. 2605, 2607(c), 2643, and 2646.

Subparts A-D [Reserved]

Subpart E - Asbestos-Containing Materials in Schools

Source: 52 FR 41846, Oct. 30, 1987, unless otherwise noted.

§ 763.80 Scope and purpose.

(a) This rule requires local education agencies to identify friable and nonfriable asbestos-containing material (ACM) in public and private elementary and secondary schools by visually inspecting school buildings for such materials, sampling such materials if they are not assumed to be ACM, and having samples analyzed by appropriate techniques referred to in this rule. The rule requires local education agencies to submit management plans to the Governor of their State by October 12, 1988, begin to implement the plans by July 9, 1989, and complete implementation of the plans in a timely fashion. In addition, local education agencies are required to use persons who have been accredited to conduct inspections, reinspections, develop management plans, or perform response actions. The rule also includes

recordkeeping requirements. Local education agencies may contractually delegate their duties under this rule, but they remain responsible for the proper performance of those duties. Local education agencies are encouraged to consult with EPA Regional Asbestos Coordinators, or if applicable, a State's lead agency designated by the State Governor, for assistance in complying with this rule.

(b) Local education agencies must provide for the transportation and disposal of asbestos in accordance with EPA's "Asbestos Waste Management Guidance." For convenience, applicable sections of this guidance are reprinted as appendix D of this subpart. There are regulations in place, however, that affect transportation and disposal of asbestos waste generated by this rule. The transportation of asbestos waste is covered by the Department of Transportation (49 CFR part 173, subpart J) and disposal is covered by the National Emissions Standards for Hazardous Air Pollutants (NESHAP) (40 CFR part 61, subpart M).

§ 763.83 Definitions.

For purposes of this subpart:

Act means the Toxic Substances Control Act (TSCA), 15 U.S.C. 2601, *et seq.*

Accessible when referring to ACM means that the material is subject to disturbance by school building occupants or custodial or maintenance personnel in the course of their normal activities.

Accredited or *accreditation* when referring to a person or laboratory means that such person or laboratory is accredited in accordance with section 206 of Title II of the Act.

Air erosion means the passage of air over friable ACBM which may result in the release of asbestos fibers.

Asbestos means the asbestiform varieties of: Chrysotile (serpentine); crocidolite (riebeckite); amosite (cummingtonitegrunerite); anthophyllite; tremolite; and actinolite.

Asbestos-containing material (ACM) when referring to school buildings means any material or product which contains more than 1 percent asbestos.

Asbestos-containing building material (ACBM) means surfacing ACM, thermal system insulation ACM, or miscellaneous ACM that is found in or on interior structural members or other parts of a school building.

Asbestos debris means pieces of ACBM that can be identified by color, texture, or composition, or means dust, if the dust is determined by an accredited inspector to be ACM.

Damaged friable miscellaneous ACM means friable miscellaneous ACM which has deteriorated or sustained physical injury such that the internal structure (cohesion) of the material is inadequate or, if applicable, which has delaminated such that its bond to the substrate (adhesion) is inadequate or which for any other reason lacks fiber cohesion or adhesion qualities. 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 ACBM in question may also indicate damage.

Damaged friable surfacing ACM means friable surfacing ACM which has deteriorated or sustained physical injury such that the internal structure (cohesion) of the material is inadequate or which has delaminated such that its bond to the substrate (adhesion) is inadequate, or which, for any other reason, lacks fiber cohesion or adhesion qualities. 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 ACBM in question may also indicate damage.

Damaged or significantly damaged thermal system insulation ACM means thermal system insulation ACM on pipes, boilers, tanks, ducts, and other thermal system insulation equipment where the insulation has lost its structural integrity, or its covering, in whole or in part, is crushed, water-stained, gouged, punctured, missing, or not intact such that it is not able to contain fibers. Damage may be further illustrated by occasional punctures, gouges or other signs of physical injury to ACM; occasional water damage on the protective coverings/jackets; or exposed ACM ends or joints. Asbestos debris originating from the ACBM in question may also indicate damage.

Encapsulation means the treatment of ACBM with a material that surrounds or embeds asbestos fibers in an adhesive matrix to prevent the release of fibers, as the encapsulant creates a membrane over the surface (bridging encapsulant) or penetrates the material and binds its components together (penetrating encapsulant).

Enclosure means an airtight, impermeable, permanent barrier around ACBM to prevent the release of asbestos fibers into the air.

Fiber release episode means any uncontrolled or unintentional disturbance of ACBM resulting in visible emission.

Friable when referring to material in a school building means that the material, when dry, may be crumbled, pulverized, or reduced to powder by hand pressure, and includes previously nonfriable material after such previously nonfriable material becomes damaged to the extent that when dry it may be crumbled, pulverized, or reduced to powder by hand pressure.

Functional space means 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 accredited to prepare management plans, design abatement projects, or conduct response actions.

High-efficiency particulate air (HEPA) refers to a filtering system capable of trapping and retaining at least 99.97 percent of all monodispersed particles 0.3 μm in diameter or larger.

Homogeneous area means an area of surfacing material, thermal system insulation material, or miscellaneous material that is uniform in color and texture.

Local education agency means:

(1) Any local educational agency as defined in section 198 of the Elementary and Secondary Education Act of 1965 (20 U.S.C. 3381).

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

(3) 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.*).

Miscellaneous ACM means miscellaneous material that is ACM in a school building.

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

Nonfriable means material in a school building which when dry may not be crumbled, pulverized, or reduced to powder by hand pressure.

Operations and maintenance program means a program of work practices to maintain friable ACBM in good condition, ensure clean up of asbestos fibers previously released, and prevent further release by minimizing and controlling friable ACBM disturbance or damage.

Potential damage means circumstances in which:

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

(2) 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 significant damage means circumstances in which:

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

(2) 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.

(3) 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.

Preventive measures means actions taken to reduce disturbance of ACBM or otherwise eliminate the reasonable likelihood of the material's becoming damaged or significantly damaged.

Removal means the taking out or the stripping of substantially all ACBM from a damaged area, a functional space, or a homogeneous area in a school building.

Repair means returning damaged ACBM to an undamaged condition or to an intact state so as to prevent fiber release.

Response action means a method, including removal, encapsulation, enclosure, repair, operations and maintenance, that protects human health and the environment from friable ACBM.

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

School means any elementary or secondary school as defined in section 198 of the Elementary and Secondary Education Act of 1965 (20 U.S.C. 2854).

School building means:

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

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

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

(4) Any maintenance, storage, or utility facility, including any hallway, essential to the operation of any facility described in this definition of "school building" under paragraphs (1), (2), or (3).

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

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

Significantly damaged friable miscellaneous ACM means damaged friable miscellaneous ACM where the damage is extensive and severe.

Significantly damaged friable surfacing ACM means damaged friable surfacing ACM in a functional space where the damage is extensive and severe.

State means a State, the District of Columbia, the Commonwealth of Puerto Rico, Guam, American Samoa, the Northern Marianas, the Trust Territory of the Pacific Islands, and the Virgin Islands.

Surfacing ACM means surfacing material that is ACM.

Surfacing material means material in a school 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.

Thermal system insulation means material in a school 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.

Thermal system insulation ACM means thermal system insulation that is ACM.

Vibration means the periodic motion of friable ACBM which may result in the release of asbestos fibers.

§ 763.84 General local education agency responsibilities.

Each local education agency shall:

(a) 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 subpart E of this part.

(b) Ensure that all custodial and maintenance employees are properly trained as required by this subpart E and other applicable Federal and/or State regulations (e.g., the Occupational Safety and Health Administration asbestos standard for construction, the EPA worker protection rule, or applicable State regulations).

(c) 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.

(d) Ensure that short-term workers (e.g., telephone repair workers, utility workers, or exterminators) who may come in contact with asbestos in a school are provided information regarding the locations of ACBM and suspected ACBM assumed to be ACM.

(e) Ensure that warning labels are posted in accordance with § 763.95.

(f) Ensure that management plans are available for inspection and notification of such availability has been provided as specified in the management plan under § 763.93(g).

(g)

(1) Designate a person to ensure that requirements under this section are properly implemented.

(2) Ensure that the designated person receives adequate training to perform duties assigned under this section. Such training shall provide, as necessary, basic knowledge of:

(i) Health effects of asbestos.

(ii) Detection, identification, and assessment of ACM.

(iii) Options for controlling ACBM.

(iv) Asbestos management programs.

(v) Relevant Federal and State regulations concerning asbestos, including those in this subpart E 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.

(h) Consider whether any conflict of interest may arise from the interrelationship among accredited personnel and whether that should influence the selection of accredited personnel to perform activities under this subpart.

§ 763.85 Inspection and reinspections.

(a) ***Inspection.***

(1) Except as provided in paragraph (a)(2) of this section, before October 12, 1988, local education agencies shall inspect each school building that they lease, own, or otherwise use as a school building to identify all locations of friable and nonfriable ACBM.

(2) Any building leased or acquired on or after October 12, 1988, that is to be used as a school building shall be inspected as described under paragraphs (a) (3) and (4) of this section prior to use as a school building. In the event that emergency use of an uninspected building as a school building is necessitated, such buildings shall be inspected within 30 days after commencement of such use.

(3) Each inspection shall be made by an accredited inspector.

(4) For each area of a school building, except as excluded under § 763.99, each person performing an inspection shall:

(i) Visually inspect the area to identify the locations of all suspected ACBM.

(ii) Touch all suspected ACBM to determine whether they are friable.

(iii) Identify all homogeneous areas of friable suspected ACBM and all homogeneous areas of nonfriable suspected ACBM.

(iv) Assume that some or all of the homogeneous areas are ACM, and, for each homogeneous area that is not assumed to be ACM, collect and submit for analysis bulk samples under §§ 763.86 and 763.87.

(v) Assess, under § 763.88, friable material in areas where samples are collected, friable material in areas that are assumed to be ACBM, and friable ACBM identified during a previous inspection.

(vi) Record the following and submit to the person designated under § 763.84 a copy of such record for inclusion in the management plan within 30 days of the inspection:

(A) An inspection report with the date of the inspection signed by each accredited person making the inspection, State of accreditation, and if applicable, his or her accreditation number.

(B) 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 ACBM is assumed to be ACM, and homogeneous areas where nonfriable suspected ACBM is assumed to be ACM.

(C) A description of the manner used to determine sampling locations, the name and signature of each accredited inspector who collected the samples, State of accreditation, and, if applicable, his or her accreditation number.

(D) A list of whether the homogeneous areas identified under paragraph (a)(4)(vi)(B) of this section, are surfacing material, thermal system insulation, or miscellaneous material.

(E) Assessments made of friable material, the name and signature of each accredited inspector making the assessment, State of accreditation, and if applicable, his or her accreditation number.

(b) ***Reinspection.***

(1) At least once every 3 years after a management plan is in effect, each local education agency shall conduct a reinspection of all friable and nonfriable known or assumed ACBM in each school building that they lease, own, or otherwise use as a school building.

(2) Each inspection shall be made by an accredited inspector.

(3) For each area of a school building, each person performing a reinspection shall:

(i) Visually reinspect, and reassess, under § 763.88, the condition of all friable known or assumed ACBM.

(ii) Visually inspect material that was previously considered nonfriable ACBM and touch the material to determine whether it has become friable since the last inspection or reinspection.

(iii) Identify any homogeneous areas with material that has become friable since the last inspection or reinspection.

(iv) For each homogeneous area of newly friable material that is already assumed to be ACBM, bulk samples may be collected and submitted for analysis in accordance with §§ 763.86 and 763.87.

(v) Assess, under § 763.88, the condition of the newly friable material in areas where samples are collected, and newly friable materials in areas that are assumed to be ACBM.

(vi) Reassess, under § 763.88, the condition of friable known or assumed ACBM previously identified.

(vii) Record the following and submit to the person designated under § 763.84 a copy of such record for inclusion in the management plan within 30 days of the reinspection:

(A) The date of the reinspection, the name and signature of the person making the reinspection, State of accreditation, and if applicable, his or her accreditation number, and any changes in the condition of known or assumed ACBM.

(B) 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 accredited inspector who collected the samples, State of accreditation, and, if applicable, his or her accreditation number.

(C) Any assessments or reassessments made of friable material, the name and signature of the accredited inspector making the assessments, State of accreditation, and if applicable, his or her accreditation number.

(c) ***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 nonfriable and therefore is subject only to periodic surveillance and preventive measures as necessary.

§ 763.86 Sampling.

(a) ***Surfacing material.*** An accredited inspector shall collect, in a statistically random manner that is representative of the homogeneous area, bulk samples from each homogeneous area of friable surfacing material that is not assumed to be ACM, and shall collect the samples as follows:

(1) At least three bulk samples shall be collected from each homogeneous area that is 1,000 ft^2 or less, except as provided in § 763.87(c)(2).

(2) At least five bulk samples shall be collected from each homogeneous area that is greater than 1,000 ft^2 but less than or equal to 5,000 ft^2, except as provided in § 763.87(c)(2).

(3) At least seven bulk samples shall be collected from each homogeneous area that is greater than 5,000 ft^2, except as provided in § 763.87(c)(2).

(b) ***Thermal system insulation.***

(1) Except as provided in paragraphs (b) (2) through (4) of this section and § 763.87(c), an accredited inspector shall 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) 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 6 linear or square feet.

(3) In a manner sufficient to determine whether the material is ACM or not ACM, 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 § 763.87(c)(2).

(4) Bulk samples are not required to be collected from any homogeneous area where the accredited inspector has determined that the thermal system insulation is fiberglass, foam glass, rubber, or other non-ACBM.

(c) ***Miscellaneous material.*** In a manner sufficient to determine whether material is ACM or not ACM, an accredited inspector shall collect bulk samples from each homogeneous area of friable miscellaneous material that is not assumed to be ACM.

(d) ***Nonfriable suspected ACBM.*** If any homogeneous area of nonfriable suspected ACBM is not assumed to be ACM, then an accredited inspector shall collect, in a manner sufficient to determine whether the material is ACM or not ACM, bulk samples from the homogeneous area of nonfriable suspected ACBM that is not assumed to be ACM.

§ 763.87 Analysis.

(a) Local education agencies shall have bulk samples, collected under § 763.86 and submitted for analysis, analyzed for asbestos using laboratories accredited by the National Bureau of Standards (NBS). Local education agencies shall use laboratories which have received interim accreditation for polarized light microscopy (PLM) analysis under the EPA Interim Asbestos Bulk Sample Analysis Quality Assurance Program until the NBS PLM laboratory accreditation program for PLM is operational.

(b) Bulk samples shall not be composited for analysis and shall be analyzed for asbestos content by PLM, using the "Interim Method for the Determination of Asbestos in Bulk Insulation Samples" found at appendix E to subpart E of this part.

(c)

(1) 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 percent or less.

(2) A homogeneous area shall be determined to contain ACM based on a finding that the results of at least one sample collected from that area shows that asbestos is present in an amount greater than 1 percent.

(d) The name and address of each laboratory performing an analysis, the date of analysis, and the name and signature of the person performing the analysis shall be submitted to the person designated under § 763.84 for inclusion into the management plan within 30 days of the analysis.

[52 FR 41846, Oct. 30, 1987, as amended at 60 FR 31922, June 19, 1995]

§ 763.88 Assessment.

(a)

(1) For each inspection and reinspection conducted under § 763.85 (a) and (c) and previous inspections specified under § 763.99, the local education agency shall have an accredited inspector provide a written assessment of all friable known or assumed ACBM in the school building.

(2) Each accredited inspector providing a written assessment shall sign and date the assessment, provide his or her State of accreditation, and if applicable, accreditation number, and submit a copy of the assessment to the person designated under § 763.84 for inclusion in the management plan within 30 days of the assessment.

(b) The inspector shall classify and give reasons in the written assessment for classifying the ACBM and suspected ACBM assumed to be ACM in the school building into one of the following categories:

(1) Damaged or significantly damaged thermal system insulation ACM.

(2) Damaged friable surfacing ACM.

(3) Significantly damaged friable surfacing ACM.

(4) Damaged or significantly damaged friable miscellaneous ACM.

(5) ACBM with potential for damage.

(6) ACBM with potential for significant damage.

(7) Any remaining friable ACBM or friable suspected ACBM.

(c) Assessment may 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:

(i) Type of damage or significant damage (e.g., flaking, blistering, water damage, or other signs of physical damage).

(ii) Severity of damage (e.g., major flaking, severely torn jackets, as opposed to occasional flaking, minor tears to jackets).

(iii) Extent or spread of damage over large areas or large percentages of the homogeneous area.

(3) Whether the material is accessible.

(4) The material's potential for disturbance.

(5) Known or suspected causes of damage or significant damage (e.g., air erosion, vandalism, vibration, water).

(6) Preventive measures which might eliminate the reasonable likelihood of undamaged ACM from becoming significantly damaged.

(d) The local education agency shall select a person accredited 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 accredited person shall sign and date the recommendation, provide his or her State of accreditation, and, if applicable, provide his or her accreditation number, and submit a copy of the recommendation to the person designated under § 763.84 for inclusion in the management plan.

§ 763.90 Response actions.

(a) The local education agency shall select and implement in a timely manner the appropriate response actions in this section consistent with the assessment conducted in § 763.88. 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 method. Nothing in this section shall be construed to prohibit removal of ACBM from a school building at any time, should removal be the preferred response action of the local education agency.

(b) If damaged or significantly damaged thermal system insulation ACM is present in a building, the local education agency shall:

(1) At least repair the damaged area.

(2) Remove the damaged material if it is not feasible, due to technological factors, to repair the damage.

(3) Maintain all thermal system insulation ACM and its covering in an intact state and undamaged condition.

(c)

(1) If damaged friable surfacing ACM or damaged friable miscellaneous ACM is present in a building, the local education agency shall select from among the following response actions: encapsulation, enclosure, removal, or repair of the damaged material.

(2) In selecting the response action from among those which meet the definitional standards in § 763.83, the local education agency shall determine which of these response actions protects human health and the environment. For purposes of determining which of these response actions are the least burdensome, the local education agency may then consider local circumstances, including occupancy and use patterns within the school building, and its economic concerns, including short- and long-term costs.

(d) If significantly damaged friable surfacing ACM or significantly damaged friable miscellaneous ACM is present in a building the local education agency shall:

(1) Immediately isolate the functional space and restrict access, unless isolation is not necessary to protect human health and the environment.

(2) Remove the material in the functional space or, depending upon whether enclosure or encapsulation would be sufficient to protect human health and the environment, enclose or encapsulate.

(e) If any friable surfacing ACM, thermal system insulation ACM, or friable miscellaneous ACM that has potential for damage is present in a building, the local education agency shall at least implement an operations and maintenance (O&M) program, as described under § 763.91.

(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 shall:

(1) Implement an O&M program, as described under § 763.91.

(2) Institute preventive measures appropriate to eliminate the reasonable likelihood that the ACM or its covering will become significantly damaged, deteriorated, or delaminated.

(3) 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, shall be designed and conducted by persons accredited to design and conduct response actions.

(h) The requirements of this subpart E in no way supersede the worker protection and work practice requirements under 29 CFR 1926.58 (Occupational Safety and Health Administration (OSHA) asbestos worker protection standards for construction), 40 CFR part 763, subpart G (EPA asbestos worker protection standards for public employees), and 40 CFR part 61, subpart M (National Emission Standards for Hazardous Air Pollutants - Asbestos).

(i) Completion of response actions.

(1) At the conclusion of any action to remove, encapsulate, or enclose ACBM or material assumed to be ACBM, a person designated by the local education agency shall visually inspect each functional space where such action was conducted to determine whether the action has been properly completed.

(2)

(i) A person designated by the local education agency shall collect air samples using aggressive sampling as described in appendix A to this subpart E to monitor air for clearance after each removal, encapsulation, and enclosure project involving ACBM, except for projects that are of small-scale, short-duration.

(ii) Local education agencies shall have air samples collected under this section analyzed for asbestos using laboratories accredited by the National Bureau of Standards to conduct such analysis using transmission electron microscopy (TEM) or, under circumstances permitted in this section, laboratories enrolled in the American Industrial Hygiene Association Proficiency Analytical Testing Program for phase contrast microscopy (PCM).

(iii) Until the National Bureau of Standards TEM laboratory accreditation program is operational, local educational agencies shall use laboratories that use the protocol described in appendix A to subpart E of this part.

(3) Except as provided in paragraphs (i)(4), and (i)(5), of this section, an action to remove, encapsulate, or enclose ACBM shall 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 appendix A of this subpart E, is not statistically significantly different, as determined by the Z-test calculation found in appendix A of this subpart E, 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 of this subpart E is below the filter background level, as defined in appendix A of this subpart E, of 70 structures per square millimeter (70 s/mm^2).

(4) An action may 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 L of air for a 25 mm filter or equal to or greater than 2,799 L of air for a 37 mm filter, and the average concentration of asbestos as analyzed by the TEM method in appendix A of this subpart E, 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/mm^2). If the average concentration of asbestos of the five air samples within the affected functional space exceeds 70 s/mm^2, or if the volume of air in each of the samples is less than 1,199 L of air for a 25 mm filter or less than 2,799 L of air for a 37 mm filter, the action shall be considered complete only when the requirements of paragraph (i)(3) or (i)(5), of this section are met.

(5) 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 ACBM that is greater than small-scale, short-duration and less than or equal to 160 square feet or 260 linear feet. The action shall be considered complete when the results of samples collected in the affected functional space and analyzed by phase contrast microscopy using the National Institute for Occupational Safety and Health (NIOSH) Method 7400 entitled “Fibers” published in the NIOSH Manual of Analytical Methods, 3rd Edition, Second Supplement, August 1987, show that the concentration of fibers for each of the five samples is less than or equal to a limit of quantitation for PCM (0.01 fibers per cubic centimeter (0.01 f/cm^3) of air). The method is available

at the addresses in § 700.17(b)(1) and (2) of this chapter. For information on the availability of this material at NARA, call 202-741-6030, or go to: *http://www.archives.gov/federal_register/code_of_federal_regulations/ibr_locations.html*. This incorporation by reference was approved by the Director of the Federal Register in accordance with 5 U.S.C. 552(a) and 1 CFR part 51. The method is incorporated as it exists on the effective date of this rule, and a notice of any change to the method will be published in the FEDERAL REGISTER.

(6) To determine the amount of ACBM affected under paragraph (i)(5) of this section, the local education agency shall add the total square or linear footage of ACBM within the containment barriers used to isolate the functional space for the action to remove, encapsulate, or enclose the ACBM. Contiguous portions of material subject to such action conducted concurrently or at approximately the same time within the same school building shall not be separated to qualify under paragraph (i)(5), of this section.

[52 FR 41846, Oct. 30, 1987, as amended at 53 FR 12525, Apr. 15, 1988; 60 FR 31922, June 19, 1995; 60 FR 34465, July 3, 1995; 69 FR 18803, Apr. 9, 2004; 77 FR 46292, Aug. 3, 2012]

§ 763.91 Operations and maintenance.

(a) ***Applicability.*** The local education agency shall implement an operations, maintenance, and repair (O&M) program under this section whenever any friable ACBM 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 nonfriable ACBM or nonfriable assumed ACBM must be treated as friable ACBM for purposes of this section when the material is about to become friable as a result of activities performed in the school building.

(b) ***Worker protection.*** Local education agencies must comply with either the OSHA Asbestos Construction Standard at 29 CFR 1926.1101, or the Asbestos Worker Protection Rule at 40 CFR 763.120, whichever is applicable.

(c) ***Cleaning*** -

(1) ***Initial cleaning.*** Unless the building has been cleaned using equivalent methods within the previous 6 months, all areas of a school building where friable ACBM, damaged or significantly damaged thermal system insulation ACM, or friable suspected ACBM assumed to be ACM are present shall be cleaned at least once after the completion of the inspection required by § 763.85(a) and before the initiation of any response action, other than O&M activities or repair, according to the following procedures:

(i) HEPA-vacuum or steam-clean all carpets.

(ii) HEPA-vacuum or wet-clean all other floors and all other horizontal surfaces.

(iii) Dispose of all debris, filters, mopheads, and cloths in sealed, leak-tight containers.

(2) ***Additional cleaning.*** The accredited management planner shall make a written recommendation to the local education agency whether additional cleaning is needed, and if so, the methods and frequency of such cleaning.

(d) ***Operations and maintenance activities.*** The local education agency shall ensure that the procedures described below to protect building occupants shall be followed for any operations and maintenance activities disturbing friable ACBM:

(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, 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.

(e) ***Maintenance activities other than small-scale, short-duration.*** The response action for any maintenance activities disturbing friable ACBM, other than small-scale, short-duration maintenance activities, shall be designed by persons accredited to design response actions and conducted by persons accredited to conduct response actions.

(f) ***Fiber release episodes*** -

(1) ***Minor fiber release episode.*** The local education agency shall ensure that the procedures described below are followed in the event of a minor fiber release episode (i.e., the falling or dislodging of 3 square or linear feet or less of friable ACBM): 5

(i) Thoroughly saturate the debris using wet methods.

(ii) Clean the area, as described in paragraph (e) of this section.

(iii) Place the asbestos debris in a sealed, leak-tight container.

(iv) 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 § 763.90.

(2) ***Major fiber release episode.*** The local education agency shall ensure that the procedures described below are followed in the event of a major fiber release episode (i.e., the falling or dislodging of more than 3 square or linear feet of friable ACBM):

(i) 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.

(ii) Shut off or temporarily modify the air-handling system to prevent the distribution of fibers to other areas in the building.

(iii) The response action for any major fiber release episode must be designed by persons accredited to design response actions and conducted by persons accredited to conduct response actions.

[52 FR 41846, Oct. 30, 1987, as amended at 65 FR 69216, Nov. 15, 2000]

§ 763.92 Training and periodic surveillance.

(a) ***Training.***

(1) The local education agency shall 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 ACBM receive awareness training of at least 2 hours, whether or not they are required to work with ACBM. New custodial and maintenance employees shall be trained within 60 days after commencement of employment. Training shall include, but not be limited to:

(i) Information regarding asbestos and its various uses and forms.

(ii) Information on the health effects associated with asbestos exposure.

(iii) Locations of ACBM identified throughout each school building in which they work.

(iv) Recognition of damage, deterioration, and delamination of ACBM.

(v) Name and telephone number of the person designated to carry out general local education agency responsibilities under § 763.84 and the availability and location of the management plan.

(2) The local education agency shall ensure that all members of its maintenance and custodial staff who conduct any activities that will result in the disturbance of ACBM shall receive training described in paragraph (a)(1) of this section and 14 hours of additional training. Additional training shall include, but not be limited to:

(i) Descriptions of the proper methods of handling ACBM.

(ii) 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/ OPPTS-86-001), available from the Director, Environmental Assistance Division (7408), Office of Pollution Prevention and Toxics, U.S. Environmental Protection Agency, Room E-543B, 1200 Pennsylvania Ave., NW., Washington, DC 20460, Telephone: (202) 554-1404, TDD: (202) 544-0551 and other personal protection measures.

(iii) The provisions of this section and § 763.91, appendices A, C, and D of this subpart E of this part, 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 1926.58.

(iv) 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 EPA-approved asbestos training or received equivalent training for O&M and periodic surveillance activities involving asbestos shall be considered trained for the purposes of this section.

(b) ***Periodic surveillance.***

(1) At least once every 6 months after a management plan is in effect, each local education agency shall conduct periodic surveillance in each building that it leases, owns, or otherwise uses as a school building that contains ACBM or is assumed to contain ACBM.

(2) Each person performing periodic surveillance shall:

(i) Visually inspect all areas that are identified in the management plan as ACBM or assumed ACBM.

(ii) Record the date of the surveillance, his or her name, and any changes in the condition of the materials.

(iii) Submit to the person designated to carry out general local education agency responsibilities under § 763.84 a copy of such record for inclusion in the management plan.

[52 FR 41846, Oct. 30, 1987, as amended at 60 FR 34465, July 3, 1995; 65 FR 69216, Nov. 15, 2000]

§ 763.93 Management plans.

(a)

(1) On or before October 12, 1988, each local education agency shall 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 an Agency designated by the Governor of the State in which the local education agency is located. The plan may be submitted in stages that cover a portion of the school buildings under the authority of the local education agency.

(2) If a building to be used as part of a school is leased or otherwise acquired after October 12, 1988, the local education agency shall include the new building in the management plan for the school prior to its use as a school building. The revised portions of the management plan shall be submitted to the Agency designated by the Governor.

(3) If a local education agency begins to use a building as a school after October 12, 1988, the local education agency shall submit a management plan for the school to the Agency designated by the Governor prior to its use as a school.

(b) On or before October 17, 1987, the Governor of each State shall notify local education agencies in the State regarding where to submit their management plans. States may establish administrative procedures for reviewing management plans. If the Governor does not disapprove a management plan within 90 days after receipt of the plan, the local education agency shall implement the plan.

(c) Each local education agency must begin implementation of its management plan on or before July 9, 1989, and complete implementation in a timely fashion.

(d) 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 this section 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.

(e) The management plan shall be developed by an accredited management planner and shall include:

(1) A list of the name and address of each school building and whether the school building contains friable ACBM, nonfriable ACBM, and friable and nonfriable suspected ACBM assumed to be ACM.

(2) For each inspection conducted before the December 14, 1987:

(i) The date of the inspection.

(ii) 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.

(iii) A copy of the analyses of any bulk samples, dates of analyses, and a copy of any other laboratory reports pertaining to the analyses.

(iv) 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.

(v) A description of assessments, required to be made under § 763.88, of material that was identified before December 14, 1987, as friable ACBM or friable suspected ACBM assumed to be ACM, and the name and signature, State of accreditation, and if applicable, accreditation number of each accredited person making the assessments.

(3) For each inspection and reinspection conducted under § 763.85:

(i) The date of the inspection or reinspection and the name and signature, State of accreditation and, if applicable, the accreditation number of each accredited inspector performing the inspection or reinspection.

(ii) A blueprint, diagram, or written description of each school building that 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 ACBM is assumed to be ACM, and where nonfriable suspected ACBM is assumed to be ACM.

(iii) A description of the manner used to determine sampling locations, and the name and signature of each accredited inspector collecting samples, the State of accreditation, and if applicable, his or her accreditation number.

(iv) A copy of the analyses of any bulk samples collected and analyzed, the name and address of any laboratory that analyzed bulk samples, a statement that the laboratory meets the applicable requirements of § 763.87(a) the date of analysis, and the name and signature of the person performing the analysis.

(v) A description of assessments, required to be made under § 763.88, of all ACBM and suspected ACBM assumed to be ACM, and the name, signature, State of accreditation, and if applicable, accreditation number of each accredited person making the assessments.

(4) The name, address, and telephone number of the person designated under § 763.84 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.

(5) The recommendations made to the local education agency regarding response actions, under § 763.88(d), the name, signature, State of accreditation of each person making the recommendations, and if applicable, his or her accreditation number.

(6) A detailed description of preventive measures and response actions to be taken, including methods to be used, for any friable ACBM, 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.

(7) With respect to the person or persons who inspected for ACBM and who will design or carry out response actions, except for operations and maintenance, with respect to the ACBM, one of the following statements:

(i) If the State has adopted a contractor accreditation program under section 206(b) of Title II of the Act, a statement that the person(s) is accredited under such plan.

(ii) A statement that the local education agency used (or will use) persons who have been accredited by another State which has adopted a contractor accreditation plan under section 206(b) of Title II of the Act or is accredited by an EPA-approved course under section 206(c) of Title II of the Act.

(8) A detailed description in the form of a blueprint, diagram, or in writing of any ACBM or suspected ACBM assumed to be ACM which remains in the school once response actions are undertaken pursuant to § 763.90. This description shall be updated as response actions are completed.

(9) A plan for reinspection under § 763.85, a plan for operations and maintenance activities under § 763.91, and a plan for periodic surveillance under § 763.92, a description of the recommendation made by the management planner regarding additional cleaning under § 763.91(c)(2) as part of an operations and maintenance program, and the response of the local education agency to that recommendation.

(10) 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.

(11) An evaluation of the resources needed to complete response actions successfully and carry out reinspection, operations and maintenance activities, periodic surveillance and training.

(12) With respect to each consultant who contributed to the management plan, the name of the consultant and one of the following statements:

(i) If the State has adopted a contractor accreditation plan under section 206(b) of Title II of the Act, a statement that the consultant is accredited under such plan.

(ii) A statement that the contractor is accredited by another State which has adopted a contractor accreditation plan under section 206(b) of Title II of the Act, or is accredited by an EPA-approved course developed under section 206(c) of Title II of the Act.

(f) A local education agency may require each management plan to contain a statement signed by an accredited management plan developer that such person has prepared or assisted in the preparation of such plan or has reviewed such plan, and that such plan is in compliance with this subpart E. Such statement may not be signed by a person who, in addition to preparing or assisting in preparing the management plan, also implements (or will implement) the management plan.

(g)

(1) Upon submission of a management plan to the Governor for review, a local education agency shall keep a copy of the plan in its administrative office. 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 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. The management plans shall be available, during normal business hours, 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.

(3) 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 for inspection to representatives of EPA and the State, the public, including parents, teachers, and other school personnel and their representatives within 5 working days after receiving a request for inspection. The school may charge a reasonable cost to make copies of the management plan.

(4) Upon submission of its management plan to the Governor and at least once each school year, the local education agency shall notify in writing parent, teacher, 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.

(h) Records required under § 763.94 shall be made by local education agencies and maintained as part of the management plan.

(i) Each management plan must contain a true and correct statement, signed by the individual designated by the local education agency under § 763.84, which certifies that the general, local education agency responsibilities, as stipulated by § 763.84, have been met or will be met.

§ 763.94 Recordkeeping.

(a) Records required under this section 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 ACBM has been removed, the local education agency shall ensure that such records are retained for 3 years after the next reinspection required under § 763.85(b)(1), or for an equivalent period.

(b) For each preventive measure and response action taken for friable and nonfriable ACBM and friable and nonfriable suspected ACBM assumed to be ACM, the local education agency shall provide:

(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 State of accreditation, and accreditation numbers, and if ACBM is removed, the name and location of storage or disposal site of the ACM.

(2) The name and signature of any person collecting any air sample required to be collected at the completion of certain response actions specified by § 763.90(i), the locations where samples were collected, date of collection, the name and address of the laboratory 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 laboratory meets the applicable requirements of § 763.90(i)(2)(ii).

(c) For each person required to be trained under § 763.92(a) (1) and (2), the local education agency shall provide 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 § 763.92(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 § 763.91(c) is performed, the local education agency shall record the name of each person performing the cleaning, the date of such cleaning, the locations cleaned, and the methods used to perform such cleaning.

(f) For each time that operations and maintenance activities under § 763.91(d) are 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 ACBM is removed, the name and location of storage or disposal site of the ACM.

(g) For each time that major asbestos activity under § 763.91(e) is performed, the local education agency shall provide the name and signature, State of accreditation, and if applicable, the accreditation number 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 ACBM is removed, the name and location of storage or disposal site of the ACM.

(h) For each fiber release episode under § 763.91(f), the local education agency shall provide 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 ACBM is removed, the name and location of storage or disposal site of the ACM.

(Approved by the Office of Management and Budget under control number 2070-0091)

§ 763.95 Warning labels.

(a) The local education agency shall attach a warning label immediately adjacent to any friable and nonfriable ACBM and suspected ACBM assumed to be ACM located in routine maintenance areas (such as boiler rooms) at each school building. This shall include:

(1) Friable ACBM that was responded to by a means other than removal.

(2) ACBM for which no response action was carried out.

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

(c) The warning label shall read, in print which is readily visible because of large size or bright color, as follows:

CAUTION: ASBESTOS. HAZARDOUS. DO NOT DISTURB WITHOUT PROPER TRAINING AND EQUIPMENT.

§ 763.97 Compliance and enforcement.

(a) ***Compliance with Title II of the Act.***

(1) Section 207(a) of Title II of the Act (15 U.S.C. 2647) makes it unlawful for any local education agency to:

(i) Fail to conduct inspections pursuant to section 203(b) of Title II of the Act, including failure to follow procedures and failure to use accredited personnel and laboratories.

(ii) Knowingly submit false information to the Governor regarding any inspection pursuant to regulations under section 203(i) of Title II of the Act.

(iii) Fail to develop a management plan pursuant to regulations under section 203(i) of Title II of the Act.

(2) Section 207(a) of Title II of the Act (15 U.S.C. 2647) also provides that any local education agency which violates any provision of section 207 shall be liable for a civil penalty of not more than $5,000 for each day during which the violation continues. For the purposes of this subpart, a "violation" means a failure to comply with respect to a single school building.

(b) ***Compliance with Title I of the Act.***

(1) Section 15(1)(D) of Title I of the Act (15 U.S.C. 2614) makes it unlawful for any person to fail or refuse to comply with any requirement of Title II or any rule promulgated or order issued under Title II. Therefore, any person who violates any requirement of this subpart is in violation of section 15 of Title I of the Act.

(2) Section 15(3) of Title I of the Act (15 U.S.C. 2614) makes it unlawful for any person to fail or refuse to establish or maintain records, submit reports, notices or other information, or permit access to or copying of records, as required by this Act or a rule thereunder.

(3) Section 15(4) (15 U.S.C. 2614) of Title I of the Act makes it unlawful for any person to fail or refuse to permit entry or inspection as required by section 11 of Title I of the Act.

(4) Section 16(a) of Title I of the Act (15 U.S.C. 2615) provides that any person who violates any provision of section 15 of Title I of the Act shall be liable to the United States for a civil penalty in an amount not to exceed $25,000 for each such violation. Each day such a violation continues shall, for purposes of this paragraph, constitute a separate violation of section 15. A local education agency is not liable for any civil penalty under Title I of the Act for failing or refusing to comply with any rule promulgated or order issued under Title II of the Act.

(c) ***Criminal penalties.*** If any violation committed by any person (including a local education agency) is knowing or willful, criminal penalties may be assessed under section 16(b) of Title I of the Act.

(d) ***Injunctive relief.*** The Agency may obtain injunctive relief under section 208(b) of Title II of the Act to respond to a hazard which poses an imminent and substantial endangerment to human health or the environment or section 17 (15 U.S.C. 2616) of Title I of the Act to restrain any violation of section 15 of Title I of the Act or to compel the taking of any action required by or under Title I of the Act.

(e) ***Citizen complaints.*** Any citizen who wishes to file a complaint pursuant to section 207(d) of Title II of the Act should direct the complaint to the Governor of the State or the EPA Asbestos Ombudsman, 1200 Pennsylvania Ave., NW., Washington, DC 20460. The citizen complaint should be in writing and identified

as a citizen complaint pursuant to section 207(d) of Title II of TSCA. The EPA Asbestos Ombudsman or the Governor shall investigate and respond to the complaint within a reasonable period of time if the allegations provide a reasonable basis to believe that a violation of the Act has occurred.

(f) ***Inspections.*** EPA may conduct inspections and review management plans under section 11 of Title I of the Act (15 U.S.C. 2610) to ensure compliance.

§ 763.98 Waiver; delegation to State.

(a) ***General.***

(1) Upon request from a state Governor and after notice and comment and an opportunity for a public hearing in accordance with paragraphs (b) and (c) of this section, EPA may waive some or all of the requirements of this subpart E if the state has established and is implementing or intends to implement a program of asbestos inspection and management that contains requirements that are at least as stringent as the requirements of this subpart. In addition, if the state chooses to receive electronic documents, the state program must include, at a minimum, the requirements of 40 CFR part 3 - (Electronic reporting).

(2) A waiver from any requirement of this subpart E shall apply only to the specific provision for which a waiver has been granted under this section. All requirements of this subpart E shall apply until a waiver is granted under this section.

(b) ***Request.*** Each request by a Governor to waive any requirement of this subpart E shall be sent with three complete copies of the request to the Regional Administrator for the EPA Region in which the State is located and shall include:

(1) A copy of the State provisions or proposed provisions relating to its program of asbestos inspection and management in schools for which the request is made.

(2)

(i) The name of the State agency that is or will be responsible for administering and enforcing the requirements for which a waiver is requested, the names and job titles of responsible officials in that agency, and phone numbers where the officials can be contacted.

(ii) In the event that more than one agency is or will be responsible for administering and enforcing the requirements for which a waiver is requested, a description of the functions to be performed by each agency, how the program will be coordinated by the lead agency to ensure consistency and effective administration in the asbestos inspection and management program within the State, the names and job titles of responsible officials in the agencies, and phone numbers where the officials can be contacted. The lead agency will serve as the central contact point for the EPA.

(3) Detailed reasons, supporting papers, and the rationale for concluding that the state's asbestos inspection and management program provisions for which the request is made are at least as stringent as the requirements of subpart E of this part, and that, if the state chooses to receive electronic documents, the state program includes, at a minimum, the requirements of 40 CFR part 3 - (Electronic reporting).

(4) A discussion of any special situations, problems, and needs pertaining to the waiver request accompanied by an explanation of how the State intends to handle them.

(5) A statement of the resources that the State intends to devote to the administration and enforcement of the provisions relating to the waiver request.

(6) Copies of any specific or enabling State laws (enacted and pending enactment) and regulations (promulgated and pending promulgation) relating to the request, including provisions for assessing criminal and/or civil penalties.

(7) Assurance from the Governor, the Attorney General, or the legal counsel of the lead agency that the lead agency or other cooperating agencies have the legal authority necessary to carry out the requirements relating to the request.

(c) ***General notice - hearing.***

(1) Within 30 days after receipt of a request for a waiver, EPA will determine the completeness of the request. If EPA does not request further information within the 30-day period, the request will be deemed complete.

(2) Within 30 days after EPA determines that a request is complete, EPA will issue for publication in the FEDERAL REGISTER a notice that announces receipt of the request, describes the information submitted under paragraph (b) of this section, and solicits written comment from interested members of the public. Comments must be submitted within 60 days.

(3) If, during the comment period, EPA receives a written objection to a Governor's request and a request for a public hearing detailing specific objections to the granting of a waiver, EPA will schedule a public hearing to be held in the affected State after the close of the comment period and will announce the public hearing date in the FEDERAL REGISTER before the date of the hearing. Each comment shall include the name and address of the person submitting the comment.

(d) ***Criteria.*** EPA may waive some or all of the requirements of subpart E of this part if:

(1) The State's lead agency and other cooperating agencies have the legal authority necessary to carry out the provisions of asbestos inspection and management in schools relating to the waiver request.

(2) The State's program of asbestos inspection and management in schools relating to the waiver request and implementation of the program are or will be at least as stringent as the requirements of this subpart E.

(3) The state has an enforcement mechanism to allow it to implement the program described in the waiver request and any electronic reporting requirements are at least as stringent as 40 CFR part 3 - (Electronic reporting).

(4) The lead agency and any cooperating agencies have or will have qualified personnel to carry out the provisions relating to the waiver request.

(5) The State will devote adequate resources to the administration and enforcement of the asbestos inspection and management provisions relating to the waiver request.

(6) When specified by EPA, the State gives satisfactory assurances that necessary steps, including specific actions it proposes to take and a time schedule for their accomplishment, will be taken within a reasonable time to conform with applicable criteria under paragraphs (d) (2) through (4) of this section.

(e) ***Decision.*** EPA will issue for publication in the FEDERAL REGISTER a notice announcing its decision to grant or deny, in whole or in part, a Governor's request for a waiver from some or all of the requirements of this subpart E within 30 days after the close of the comment period or within 30 days following a public hearing, whichever is applicable. The notice will include the Agency's reasons and rationale for granting or denying the Governor's request. The 30-day period may be extended if mutually agreed upon by EPA and the State.

(f) ***Modifications.*** When any substantial change is made in the administration or enforcement of a State program for which a waiver was granted under this section, a responsible official in the lead agency shall submit such changes to EPA.

(g) ***Reports.*** The lead agency in each State that has been granted a waiver by EPA from any requirement of subpart E of this part shall submit a report to the Regional Administrator for the Region in which the State is located at least once every 12 months to include the following information:

(1) A summary of the State's implementation and enforcement activities during the last reporting period relating to provisions waived under this section, including enforcement actions taken.

(2) Any changes in the administration or enforcement of the State program implemented during the last reporting period.

(3) Other reports as may be required by EPA to carry out effective oversight of any requirement of this subpart E that was waived under this section.

(h) ***Oversight.*** EPA may periodically evaluate the adequacy of a State's implementation and enforcement of and resources devoted to carrying out requirements relating to the waiver. This evaluation may include, but is not limited to, site visits to local education agencies without prior notice to the State.

(i) ***Informal conference.***

(1) EPA may request that an informal conference be held between appropriate State and EPA officials when EPA has reason to believe that a State has failed to:

(i) Substantially comply with the terms of any provision that was waived under this section.

(ii) Meet the criteria under paragraph (d) of this section, including the failure to carry out enforcement activities or act on violations of the State program.

(2) EPA will:

(i) Specify to the State those aspects of the State's program believed to be inadequate.

(ii) Specify to the State the facts that underlie the belief of inadequacy.

(3) If EPA finds, on the basis of information submitted by the State at the conference, that deficiencies did not exist or were corrected by the State, no further action is required.

(4) Where EPA finds that deficiencies in the State program exist, a plan to correct the deficiencies shall be negotiated between the State and EPA. The plan shall detail the deficiencies found in the State program, specify the steps the State has taken or will take to remedy the deficiencies, and establish a schedule for each remedial action to be initiated.

(j) ***Rescission.***

(1) If the State fails to meet with EPA or fails to correct deficiencies raised at the informal conference, EPA will deliver to the Governor of the State and a responsible official in the lead agency a written notice of its intent to rescind, in whole or part, the waiver.

(2) EPA will issue for publication in the FEDERAL REGISTER a notice that announces the rescission of the waiver, describes those aspects of the State's program determined to be inadequate, and specifies the facts that underlie the findings of inadequacy.

[52 FR 41846, Oct. 30, 1987, as amended at 70 FR 59889, Oct. 13, 2005]

§ 763.99 Exclusions.

(a) A local education agency shall not be required to perform an inspection under § 763.85(a) in any sampling area as defined in 40 CFR 763.103 or homogeneous area of a school building where:

(1) An accredited inspector has determined that, based on sampling records, friable ACBM was identified in that homogeneous or sampling area during an inspection conducted before December 14, 1987. The inspector shall sign and date a statement to that effect with his or her State of accreditation and if applicable, accreditation number and, within 30 days after such determination, submit a copy of the statement to the person designated under § 763.84 for inclusion in the management plan. However, an accredited inspector shall assess the friable ACBM under § 763.88.

(2) An accredited inspector has determined that, based on sampling records, nonfriable ACBM was identified in that homogeneous or sampling area during an inspection conducted before December 14, 1987. The inspector shall sign and date a statement to that effect with his or her State of accreditation and if applicable, accreditation number and, within 30 days after such determination, submit a copy of the statement to the person designated under § 763.84 for inclusion in the management plan. However, an accredited inspector shall identify whether material that was nonfriable has become friable since that previous inspection and shall assess the newly-friable ACBM under § 763.88.

(3) Based on sampling records and inspection records, an accredited inspector has determined that no ACBM is present in the homogeneous or sampling area and the records show that the area was sampled, before December 14, 1987 in substantial compliance with § 763.85(a), which for purposes of this section means in a random manner and with a sufficient number of samples to reasonably ensure that the area is not ACBM.

(i) The accredited inspector shall sign and date a statement, with his or her State of accreditation and if applicable, accreditation number that the homogeneous or sampling area determined not to be ACBM was sampled in substantial compliance with § 763.85(a).

(ii) Within 30 days after the inspector's determination, the local education agency shall submit a copy of the inspector's statement to the EPA Regional Office and shall include the statement in the management plan for that school.

(4) The lead agency responsible for asbestos inspection in a State that has been granted a waiver from § 763.85(a) has determined that, based on sampling records and inspection records, no ACBM is present in the homogeneous or sampling area and the records show that the area was sampled before December 14, 1987, in substantial compliance with § 763.85(a). Such determination shall be included in the management plan for that school.

(5) An accredited inspector has determined that, based on records of an inspection conducted before December 14, 1987, suspected ACBM identified in that homogeneous or sampling area is assumed to be ACM. The inspector shall sign and date a statement to that effect, with his or her State of accreditation and if applicable, accreditation number and, within 30 days of such determination, submit a copy of the statement to the person designated under § 763.84 for inclusion in the management plan. However, an accredited inspector shall identify whether material that was nonfriable suspected ACBM assumed to be ACM has become friable since the previous inspection and shall assess the newly friable material and previously identified friable suspected ACBM assumed to be ACM under § 763.88.

(6) Based on inspection records and contractor and clearance records, an accredited inspector has determined that no ACBM is present in the homogeneous or sampling area where asbestos removal operations have been conducted before December 14, 1987, and shall sign and date a statement to that effect and include his or her State of accreditation and, if applicable, accreditation number. The local education agency shall submit a copy of the statement to the EPA Regional Office and shall include the statement in the management plan for that school.

(7) An architect or project engineer responsible for the construction of a new school building built after October 12, 1988, or an accredited inspector signs a statement that no ACBM was specified as a building material in any construction document for the building, or, to the best of his or her knowledge, no ACBM was used as a building material in the building. The local education agency shall submit a copy of the signed statement of the architect, project engineer, or accredited inspector to the EPA Regional Office and shall include the statement in the management plan for that school.

(b) The exclusion, under paragraphs (a) (1) through (4) of this section, from conducting the inspection under § 763.85(a) shall apply only to homogeneous or sampling areas of a school building that were inspected and sampled before October 17, 1987. The local education agency shall conduct an inspection under § 763.85(a) of all areas inspected before October 17, 1987, that were not sampled or were not assumed to be ACM.

(c) If ACBM is subsequently found in a homogeneous or sampling area of a local education agency that had been identified as receiving an exclusion by an accredited inspector under paragraphs (a) (3), (4), (5) of this section, or an architect, project engineer or accredited inspector under paragraph (a)(7) of this section, the local education agency shall have 180 days following the date of identification of ACBM to comply with this subpart E.

Appendix A to Subpart E of Part 763 - Interim Transmission Electron Microscopy Analytical Methods - Mandatory and Nonmandatory - and Mandatory Section To Determine Completion of Response Actions

I. Introduction

The following appendix contains three units. The first unit is the mandatory transmission electron microscopy (TEM) method which all laboratories must follow; it is the minimum requirement for analysis of air samples for asbestos by TEM. The mandatory method contains the essential elements of the TEM method. The second unit contains the complete non-mandatory method. The non-mandatory method supplements the mandatory method by including additional steps to improve the analysis. EPA recommends that the non-mandatory method be employed for analyzing air filters; however, the

laboratory may choose to employ the mandatory method. The non-mandatory method contains the same minimum requirements as are outlined in the mandatory method. Hence, laboratories may choose either of the two methods for analyzing air samples by TEM.

The final unit of this Appendix A to subpart E defines the steps which must be taken to determine completion of response actions. This unit is mandatory.

II. Mandatory Transmission Electron Microscopy Method

A. Definitions of Terms

1. ***Analytical sensitivity*** - Airborne asbestos concentration represented by each fiber counted under the electron microscope. It is determined by the air volume collected and the proportion of the filter examined. This method requires that the analytical sensitivity be no greater than 0.005 structures/cm^3.
2. ***Asbestiform*** - A specific type of mineral fibrosity in which the fibers and fibrils possess high tensile strength and flexibility.
3. ***Aspect ratio*** - A ratio of the length to the width of a particle. Minimum aspect ratio as defined by this method is equal to or greater than 5:1.
4. ***Bundle*** - A structure composed of three or more fibers in a parallel arrangement with each fiber closer than one fiber diameter.
5. ***Clean area*** - A controlled environment which is maintained and monitored to assure a low probability of asbestos contamination to materials in that space. Clean areas used in this method have HEPA filtered air under positive pressure and are capable of sustained operation with an open laboratory blank which on subsequent analysis has an average of less than 18 structures/mm^2 in an area of 0.057 mm^2 (nominally 10 200-mesh grid openings) and a maximum of 53 structures/mm^2 for any single preparation for that same area.
6. ***Cluster*** - A structure with fibers in a random arrangement such that all fibers are intermixed and no single fiber is isolated from the group. Groupings must have more than two intersections.
7. ***ED*** - Electron diffraction.
8. ***EDXA*** - Energy dispersive X-ray analysis.
9. ***Fiber*** - A structure greater than or equal to 0.5 µm in length with an aspect ratio (length to width) of 5:1 or greater and having substantially parallel sides.
10. ***Grid*** - An open structure for mounting on the sample to aid in its examination in the TEM. The term is used here to denote a 200-mesh copper lattice approximately 3 mm in diameter.
11. ***Intersection*** - Nonparallel touching or crossing of fibers, with the projection having an aspect ratio of 5:1 or greater.
12. ***Laboratory sample coordinator*** - That person responsible for the conduct of sample handling and the certification of the testing procedures.

13. ***Filter background level*** - The concentration of structures per square millimeter of filter that is considered indistinguishable from the concentration measured on a blank (filters through which no air has been drawn). For this method the filter background level is defined as 70 structures/ mm^2.

14. ***Matrix*** - Fiber or fibers with one end free and the other end embedded in or hidden by a particulate. The exposed fiber must meet the fiber definition.

15. ***NSD*** - No structure detected.

16. ***Operator*** - A person responsible for the TEM instrumental analysis of the sample.

17. ***PCM*** - Phase contrast microscopy.

18. ***SAED*** - Selected area electron diffraction.

19. ***SEM*** - Scanning electron microscope.

20. ***STEM*** - Scanning transmission electron microscope.

21. ***Structure*** - a microscopic bundle, cluster, fiber, or matrix which may contain asbestos.

22. ***S/cm ^{3}*** - Structures per cubic centimeter.

23. ***S/mm ^{2}*** - Structures per square millimeter.

24. ***TEM*** - Transmission electron microscope.

B. Sampling

1. The sampling agency must have written quality control procedures and documents which verify compliance.

2. Sampling operations must be performed by qualified individuals completely independent of the abatement contractor to avoid possible conflict of interest (References 1, 2, 3, and 5 of Unit II.J.).

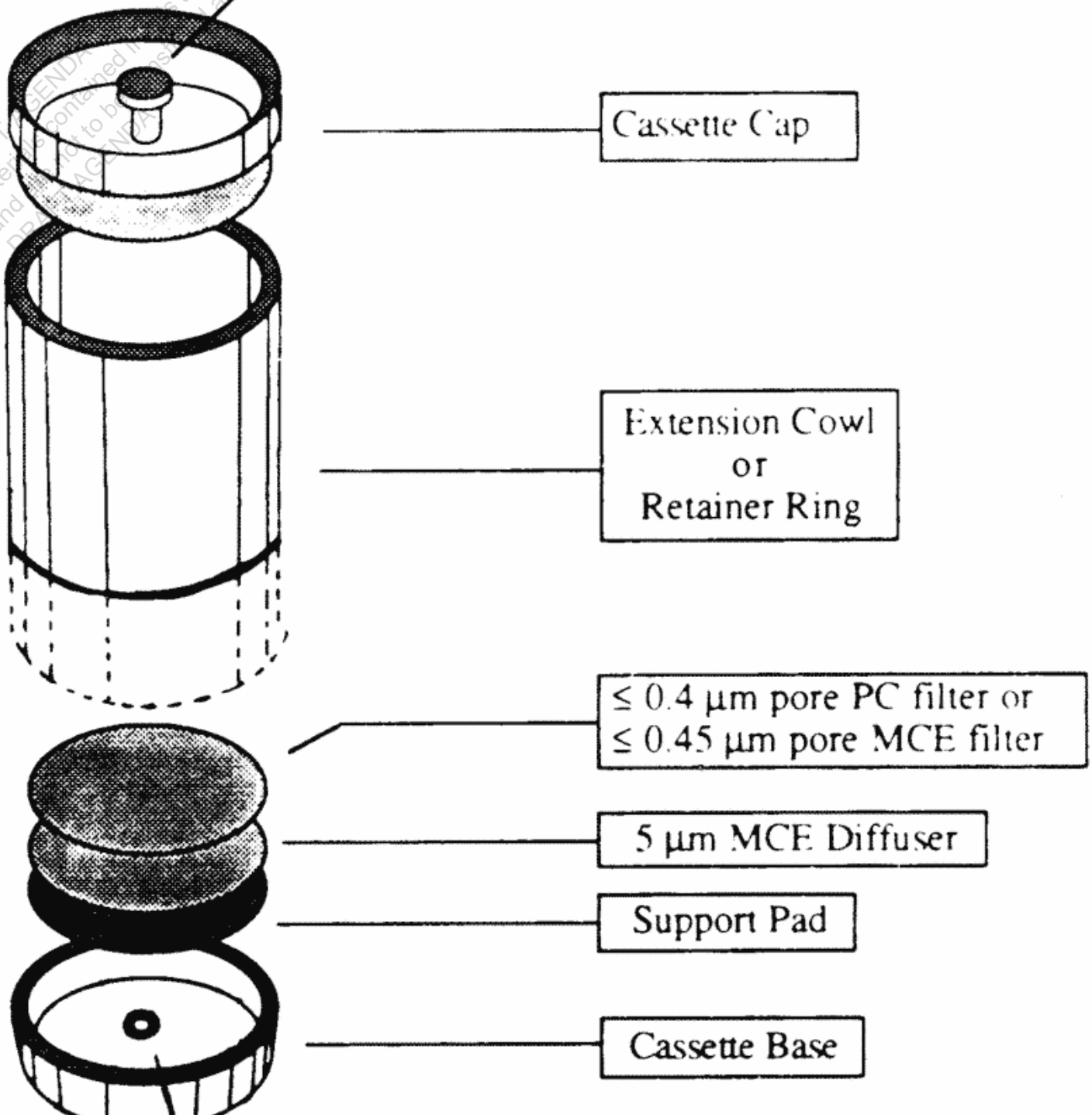
3. Sampling for airborne asbestos following an abatement action must use commercially available cassettes.

4. Prescreen the loaded cassette collection filters to assure that they do not contain concentrations of asbestos which may interfere with the analysis of the sample. A filter blank average of less than 18 s/mm^2 in an area of 0.057 mm^2 (nominally 10 200-mesh grid openings) and a single preparation with a maximum of 53 s/mm^2 for that same area is acceptable for this method.

5. Use sample collection filters which are either polycarbonate having a pore size less than or equal to 0.4 µm or mixed cellulose ester having a pore size less than or equal to 0.45 µm.

6. Place these filters in series with a 5.0 µm backup filter (to serve as a diffuser) and a support pad. See the following Figure 1:

FIGURE I--SAMPLING CASSETTE CONFIGURATION



7. Reloading of used cassettes is not permitted.

8. Orient the cassette downward at approximately 45 degrees from the horizontal.

9. Maintain a log of all pertinent sampling information.

10. Calibrate sampling pumps and their flow indicators over the range of their intended use with a recognized standard. Assemble the sampling system with a representative filter (not the filter which will be used in sampling) before and after the sampling operation.

11. Record all calibration information.

12. Ensure that the mechanical vibrations from the pump will be minimized to prevent transferral of vibration to the cassette.

13. Ensure that a continuous smooth flow of negative pressure is delivered by the pump by damping out any pump action fluctuations if necessary.

14. The final plastic barrier around the abatement area remains in place for the sampling period.

15. After the area has passed a thorough visual inspection, use aggressive sampling conditions to dislodge any remaining dust. (See suggested protocol in Unit III.B.7.d.)

16. Select an appropriate flow rate equal to or greater than 1 liter per minute (L/min) or less than 10 L/min for 25 mm cassettes. Larger filters may be operated at proportionally higher flow rates.

17. A minimum of 13 samples are to be collected for each testing site consisting of the following:

    a. A minimum of five samples per abatement area.

    b. A minimum of five samples per ambient area positioned at locations representative of the air entering the abatement site.

    c. Two field blanks are to be taken by removing the cap for not more than 30 seconds and replacing it at the time of sampling before sampling is initiated at the following places:

        i. Near the entrance to each abatement area.

        ii. At one of the ambient sites. (DO NOT leave the field blanks open during the sampling period.)

    d. A sealed blank is to be carried with each sample set. This representative cassette is not to be opened in the field.

18. Perform a leak check of the sampling system at each indoor and outdoor sampling site by activating the pump with the closed sampling cassette in line. Any flow indicates a leak which must be eliminated before initiating the sampling operation.

19. The following Table I specifies volume ranges to be used:

TABLE 1--NUMBER OF 200 MESH EM GRID OPENINGS ($0.0057\ MM^2$) THAT NEED TO BE ANALYZED TO MAINTAIN SENSITIVITY OF 0.005 STRUCTURES/CC BASED ON VOLUME AND EFFECTIVE FILTER AREA

Effective Filter Area 385 sq mm		Effective Filter Area 855 sq mm	
Volume (liters)	# of grid openings	Volume (liters)	# of grid openings
560	*24*	*1,250*	*24*
600	23	1,300	23
700	19	1,400	21
800	17	1,600	19
900	15	1,800	17
1,000	14	2,000	15
1,100	12	2,200	14
1,200	**11**	2,400	13
1,300	**10**	2,600	12
1,400	**10**	**2,800**	**11**
1,500	**9**	**3,000**	**10**
1,600	**8**	**3,200**	**9**
1,700	**8**	**3,400**	**9**
1,800	**8**	**3,600**	**8**
1,900	7	**3,800**	**8**
2,000	7	**4,000**	**8**
2,100	6	4,200	7
2,200	6	4,400	7
2,300	6	4,600	7
2,400	6	4,800	6
2,500	5	5,000	6
2,600	5	5,200	6
2,700	5	5,400	6
2,800	5	5,600	5
2,900	5	5,800	5
3,000	5	6,000	5
3,100	4	6,200	5
3,200	4	6,400	5
3,300	4	6,600	5
3,400	4	6,800	4
3,500	4	7,000	4
3,600	4	7,200	4
3,700	4	7,400	4
3,800	4	7,600	4

Recommended Volume Range

Recommended Volume Range

Note minimum volumes required:
25 mm : 560 liters
37 mm : 1250 liters

Filter diameter of 25 mm = effective area of 385 sq mm
Filter diameter of 37 mm = effective area of 855 sq mm

20. Ensure that the sampler is turned upright before interrupting the pump flow.

21. Check that all samples are clearly labeled and that all pertinent information has been enclosed before transfer of the samples to the laboratory.

22. Ensure that the samples are stored in a secure and representative location.

23. Do not change containers if portions of these filters are taken for other purposes.

24. A summary of Sample Data Quality Objectives is shown in the following Table II:

TABLE II--SUMMARY OF SAMPLING AGENCY DATA QUALITY OBJECTIVES

This table summarizes the data quality objectives from the performance of this method in terms of precision, accuracy, completeness, representativeness, and comparability. These objectives are assured by the periodic control checks and reference checks listed here and described in the text of the method.

Unit Operation	QC Check	Frequency	Conformance Expectation
Sampling materials	Sealed blank	1 per I/O site	95%
Sample procedures	Field blanks	2 per I/O site	95%
	Pump calibration	Before and after each field series	90%
Sample custody	Review of chain-of-custody record	Each sample	95% complete
Sample shipment	Review of sending report	Each sample	95% complete

C. Sample Shipment

Ship bulk samples to the analytical laboratory in a separate container from air samples.

D. Sample Receiving

1. Designate one individual as sample coordinator at the laboratory. While that individual will normally be available to receive samples, the coordinator may train and supervise others in receiving procedures for those times when he/she is not available.

2. Bulk samples and air samples delivered to the analytical laboratory in the same container shall be rejected.

E. Sample Preparation

1. All sample preparation and analysis shall be performed by a laboratory independent of the abatement contractor.

2. Wet-wipe the exterior of the cassettes to minimize contamination possibilities before taking them into the clean room facility.

3. Perform sample preparation in a well-equipped clean facility.

Note: The clean area is required to have the following minimum characteristics. The area

or hood must be capable of maintaining a positive pressure with make-up air being HEPA-filtered. The cumulative analytical blank concentration must average less than 18 s/mm^2 in an area of 0.057 mm^2 (nominally 10 200-mesh grid openings) and a single preparation with a maximum of 53 s/mm^2 for that same area.

4. Preparation areas for air samples must not only be separated from preparation areas for bulk samples, but they must be prepared in separate rooms.

5. Direct preparation techniques are required. The object is to produce an intact film containing the particulates of the filter surface which is sufficiently clear for TEM analysis.

   a. TEM Grid Opening Area measurement must be done as follows:

      i. The filter portion being used for sample preparation must have the surface collapsed using an acetone vapor technique.

      ii. Measure 20 grid openings on each of 20 random 200-mesh copper grids by placing a grid on a glass and examining it under the PCM. Use a calibrated graticule to measure the average field diameters. From the data, calculate the field area for an average grid opening.

      iii. Measurements can also be made on the TEM at a properly calibrated low magnification or on an optical microscope at a magnification of approximately 400X by using an eyepiece fitted with a scale that has been calibrated against a stage micrometer. Optical microscopy utilizing manual or automated procedures may be used providing instrument calibration can be verified.

   b. TEM specimen preparation from polycarbonate (PC) filters. Procedures as described in Unit III.G. or other equivalent methods may be used.

   c. TEM specimen preparation from mixed cellulose ester (MCE) filters.

      i. Filter portion being used for sample preparation must have the surface collapsed using an acetone vapor technique or the Burdette procedure (Ref. 7 of Unit II.J.)

      ii. Plasma etching of the collapsed filter is required. The microscope slide to which the collapsed filter pieces are attached is placed in a plasma asher. Because plasma ashers vary greatly in their performance, both from unit to unit and between different positions in the asher chamber, it is difficult to specify the conditions that should be used. Insufficient etching will result in a failure to expose embedded filters, and too much etching may result in loss of particulate from the surface. As an interim measure, it is recommended that the time for ashing of a known weight of a collapsed filter be established and that the etching rate be calculated in terms of micrometers per second. The actual etching time used for the particulate asher and operating conditions will then be set such that a 1-2 μm (10 percent) layer of collapsed surface will be removed.

      iii. Procedures as described in Unit III. or other equivalent methods may be used to prepare samples.

F. TEM Method

1. An 80-120 kV TEM capable of performing electron diffraction with a fluorescent screen inscribed with calibrated gradations is required. If the TEM is equipped with EDXA it must either have a STEM attachment or be capable of producing a spot less than 250 nm in diameter at crossover. The microscope shall be calibrated routinely for magnification and camera constant.

2. ***Determination of Camera Constant and ED Pattern Analysis.*** The camera length of the TEM in ED operating mode must be calibrated before ED patterns on unknown samples are observed. This can be achieved by using a carbon-coated grid on which a thin film of gold has been sputtered or evaporated. A thin film of gold is evaporated on the specimen TEM grid to obtain zone-axis ED patterns superimposed with a ring pattern from the polycrystalline gold film. In practice, it is desirable to optimize the thickness of the gold film so that only one or two sharp rings are obtained on the superimposed ED pattern. Thicker gold film would normally give multiple gold rings, but it will tend to mask weaker diffraction spots from the unknown fibrous particulate. Since the unknown d-spacings of most interest in asbestos analysis are those which lie closest to the transmitted beam, multiple gold rings are unnecessary on zone-axis ED patterns. An average camera constant using multiple gold rings can be determined. The camera constant is one-half the diameter of the rings times the interplanar spacing of the ring being measured.

3. ***Magnification Calibration.*** The magnification calibration must be done at the fluorescent screen. The TEM must be calibrated at the grid opening magnification (if used) and also at the magnification used for fiber counting. This is performed with a cross grating replica (e.g., one containing 2,160 lines/mm). Define a field of view on the fluorescent screen either by markings or physical boundaries. The field of view must be measurable or previously inscribed with a scale or concentric circles (all scales should be metric). A logbook must be maintained, and the dates of calibration and the values obtained must be recorded. The frequency of calibration depends on the past history of the particular microscope. After any maintenance of the microscope that involved adjustment of the power supplied to the lenses or the high-voltage system or the mechanical disassembly of the electron optical column apart from filament exchange, the magnification must be recalibrated. Before the TEM calibration is performed, the analyst must ensure that the cross grating replica is placed at the same distance from the objective lens as the specimens are. For instruments that incorporate a eucentric tilting specimen stage, all specimens and the cross grating replica must be placed at the eucentric position.

4. While not required on every microscope in the laboratory, the laboratory must have either one microscope equipped with energy dispersive X-ray analysis or access to an equivalent system on a TEM in another laboratory.

5. Microscope settings: 80-120 kV, grid assessment 250-1,000X, then 15,000-20,000X screen magnification for analysis.

6. Approximately one-half (0.5) of the predetermined sample area to be analyzed shall be performed on one sample grid preparation and the remaining half on a second sample grid preparation.

7. Individual grid openings with greater than 5 percent openings (holes) or covered with greater than 25 percent particulate matter or obviously having nonuniform loading must not be analyzed.

8. Reject the grid if:

    a. Less than 50 percent of the grid openings covered by the replica are intact.

b. The replica is doubled or folded.

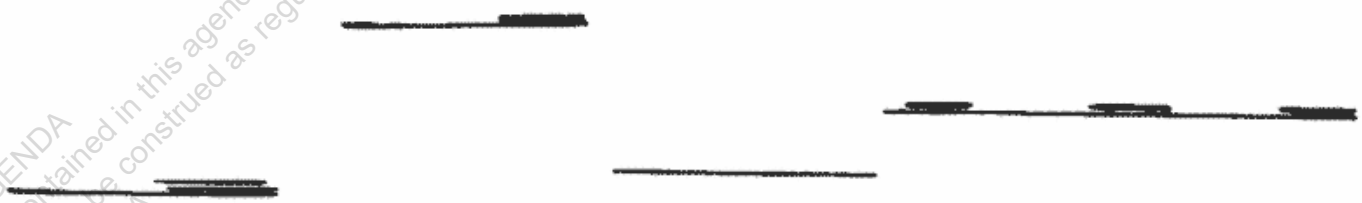
c. The replica is too dark because of incomplete dissolution of the filter.

9. ***Recording Rules.***

a. Any continuous grouping of particles in which an asbestos fiber with an aspect ratio greater than or equal to 5:1 and a length greater than or equal to 0.5 µm is detected shall be recorded on the count sheet. These will be designated asbestos structures and will be classified as fibers, bundles, clusters, or matrices. Record as individual fibers any contiguous grouping having 0, 1, or 2 definable intersections. Groupings having more than 2 intersections are to be described as cluster or matrix. An intersection is a nonparallel touching or crossing of fibers, with the projection having an aspect ratio of 5:1 or greater. See the following Figure 2:

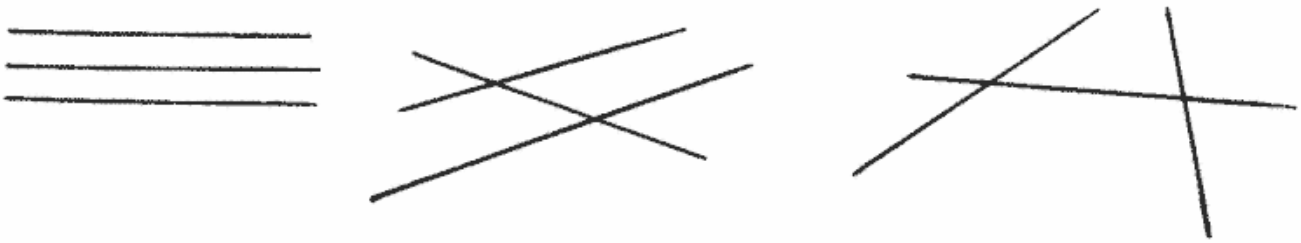
FIGURE 2--COUNTING GUIDELINES USED IN DETERMINING ASBESTOS STRUCTURES

Count as 1 fiber; 1 Structure; no intersections.

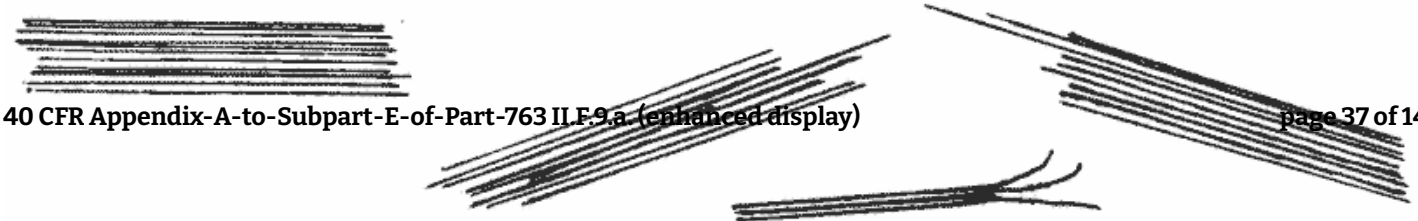


Count as 2 fibers if space between fibers is greater than width of 1 fiber diameter or number of intersections is equal to or less than 1.

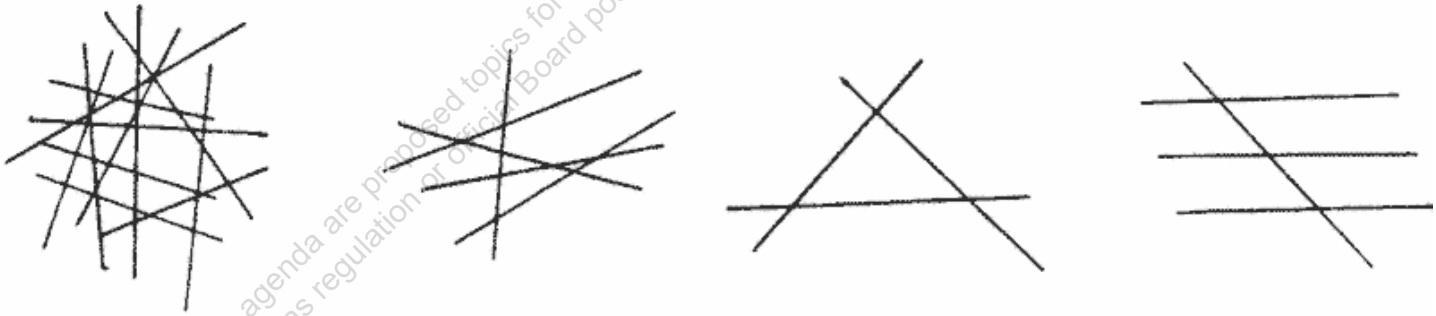
Count as 3 structures if space between fibers is greater than width of 1 fiber diameter or if the number of intersections is equal to or less than 2.



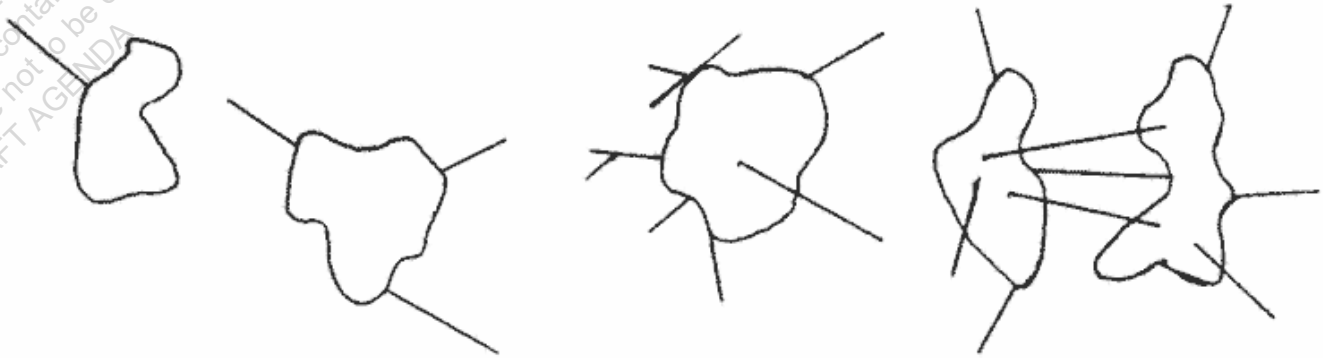
Count bundles as 1 structure; 3 or more parallel fibrils less than 1 fiber diameter separation.



Count clusters as 1 structure; fibers having greater than or equal to 3 intersections.



Count matrix as 1 structure.



DO NOT COUNT AS STRUCTURES:

<0.5 micrometer in length
<5:1 Aspect Ratio

i. ***Fiber.*** A structure having a minimum length greater than or equal to 0.5 μm and an aspect ratio (length to width) of 5:1 or greater and substantially parallel sides. Note the appearance of the end of the fiber, i.e., whether it is flat, rounded or dovetailed.

ii. ***Bundle.*** A structure composed of three or more fibers in a parallel arrangement with each fiber closer than one fiber diameter.

iii. ***Cluster.*** A structure with fibers in a random arrangement such that all fibers are intermixed and no single fiber is isolated from the group. Groupings must have more than two intersections.

iv. ***Matrix.*** Fiber or fibers with one end free and the other end embedded in or hidden by a particulate. The exposed fiber must meet the fiber definition.

b. Separate categories will be maintained for fibers less than 5 µm and for fibers equal to or greater than 5 µm in length.

c. Record NSD when no structures are detected in the field.

d. Visual identification of electron diffraction (ED) patterns is required for each asbestos structure counted which would cause the analysis to exceed the 70 s/mm^2 concentration. (Generally this means the first four fibers identified as asbestos must exhibit an identifiable diffraction pattern for chrysotile or amphibole.)

e. The micrograph number of the recorded diffraction patterns must be reported to the client and maintained in the laboratory's quality assurance records. In the event that examination of the pattern by a qualified individual indicates that the pattern has been misidentified visually, the client shall be contacted.

f. Energy Dispersive X-ray Analysis (EDXA) is required of all amphiboles which would cause the analysis results to exceed the 70 s/mm^2 concentration. (Generally speaking, the first 4 amphiboles would require EDXA.)

g. If the number of fibers in the nonasbestos class would cause the analysis to exceed the 70 s/mm^2 concentration, the fact that they are not asbestos must be confirmed by EDXA or measurement of a zone axis diffraction pattern.

h. Fibers classified as chrysotile must be identified by diffraction or X-ray analysis and recorded on a count sheet. X-ray analysis alone can be used only after 70 s/mm^2 have been exceeded for a particular sample.

i. Fibers classified as amphiboles must be identified by X-ray analysis and electron diffraction and recorded on the count sheet. (X-ray analysis alone can be used only after 70 s/mm^2 have been exceeded for a particular sample.)

j. If a diffraction pattern was recorded on film, record the micrograph number on the count sheet.

k. If an electron diffraction was attempted but no pattern was observed, record N on the count sheet.

l. If an EDXA spectrum was attempted but not observed, record N on the count sheet.

m. If an X-ray analysis spectrum is stored, record the file and disk number on the count sheet.

10. Classification Rules.

a. ***Fiber.*** A structure having a minimum length greater than or equal to 0.5 µm and an aspect ratio (length to width) of 5:1 or greater and substantially parallel sides. Note the appearance of the end of the fiber, i.e., whether it is flat, rounded or dovetailed.

b. ***Bundle.*** A structure composed of three or more fibers in a parallel arrangement with each fiber closer than one fiber diameter.

c. ***Cluster.*** A structure with fibers in a random arrangement such that all fibers are intermixed and no single fiber is isolated from the group. Groupings must have more than two intersections.

d. ***Matrix.*** Fiber or fibers with one end free and the other end embedded in or hidden by a particulate. The exposed fiber must meet the fiber definition.

11. After finishing with a grid, remove it from the microscope, and replace it in the appropriate grid holder. Sample grids must be stored for a minimum of 1 year from the date of the analysis; the sample cassette must be retained for a minimum of 30 days by the laboratory or returned at the client's request.

G. Sample Analytical Sequence

1. Under the present sampling requirements a minimum of 13 samples is to be collected for the clearance testing of an abatement site. These include five abatement area samples, five ambient samples, two field blanks, and one sealed blank.
2. Carry out visual inspection of work site prior to air monitoring.
3. Collect a minimum of 5 air samples inside the work site and 5 samples outside the work site. The indoor and outdoor samples shall be taken during the same time period.
4. Remaining steps in the analytical sequence are contained in Unit IV of this Appendix.

H. Reporting

1. The following information must be reported to the client for each sample analyzed:
   a. Concentration in structures per square millimeter and structures per cubic centimeter.
   b. Analytical sensitivity used for the analysis.
   c. Number of asbestos structures.
   d. Area analyzed.
   e. Volume of air sampled (which must be initially supplied to lab by client).
   f. Copy of the count sheet must be included with the report.
   g. Signature of laboratory official to indicate that the laboratory met specifications of the method.
   h. Report form must contain official laboratory identification (e.g., letterhead).
   i. Type of asbestos.

I. Quality Control/Quality Assurance Procedures (Data Quality Indicators)

Monitoring the environment for airborne asbestos requires the use of sensitive sampling and analysis procedures. Because the test is sensitive, it may be influenced by a variety of factors. These include the supplies used in the sampling operation, the performance of the sampling, the preparation of the grid from the filter and the actual examination of this grid in the microscope. Each of these unit operations must produce a product of defined quality if the analytical result is to be a reliable and meaningful test result. Accordingly, a series of control checks and reference standards are to be performed along with the sample analysis as indicators that the materials used are adequate and the operations are within acceptable limits. In this way, the quality of the data is defined and the results are of known value. These checks and tests also provide timely and specific warning of any problems which might develop within the sampling and analysis operations. A description of these quality control/quality assurance procedures is summarized in the following Table III:

TABLE III--SUMMARY OF LABORATORY DATA QUALITY OBJECTIVES

Unit Operation	QC Check	Frequency	Conformance Expectation
Sample receiving	Review of receiving report	Each sample	95% complete
Sample custody	Review of chain-of-custody record	Each sample	95% complete
Sample preparation	Supplies and reagents	On receipt	Meet specs. or reject
	Grid opening size	20 openings/20 grids/lot of 1000 or 1 opening/sample	100%
	Special clean area monitoring	After cleaning or service	Meet specs or reclean
	Laboratory blank	1 per prep series or 10%	Meet specs. or reanalyze series
	Plasma etch blank	1 per 20 samples	75%
	Multiple preps (3 per sample)	Each sample	One with cover of 15 complete grid sqs.
Sample analysis	System check	Each day	Each day
	Alignment check	Each day	Each day
	Magnification calibration with low and high standards	Each month or after service	95%
	ED calibration by gold standard	Weekly	95%
	EDS calibration by copper line	Daily	95%
Performance check	Laboratory blank (measure of cleanliness)	Prep 1 per series or 10% read 1 per 25 samples	Meet specs or reanalyze series
	Replicate counting (measure of precision)	1 per 100 samples	1.5 x Poisson Std. Dev.
	Duplicate analysis (measure of reproducibility)	1 per 100 samples	2 x Poisson Std. Dev.
	Known samples of typical materials (working standards)	Training and for comparison with unknowns	100%
	Analysis of NBS SRM 1876 and/or RM 8410 (measure of accuracy and comparability)	1 per analyst per year	1.5 x Poisson Std. Dev.
	Data entry review (data validation and measure of completeness)	Each sample	95%
	Record and verify ID electron diffraction pattern of structure	1 per 5 samples	80% accuracy
Calculations and data reduction	Hand calculation of automated data reduction procedure or independent recalculation of hand-calculated data	1 per 100 samples	85%

1. When the samples arrive at the laboratory, check the samples and documentation for completeness and requirements before initiating the analysis.

2. Check all laboratory reagents and supplies for acceptable asbestos background levels.

3. Conduct all sample preparation in a clean room environment monitored by laboratory blanks. Testing with blanks must also be done after cleaning or servicing the room.
4. Prepare multiple grids of each sample.
5. Provide laboratory blanks with each sample batch. Maintain a cumulative average of these results. If there are more than 53 fibers/mm^2 per 10 200-mesh grid openings, the system must be checked for possible sources of contamination.
6. Perform a system check on the transmission electron microscope daily.
7. Make periodic performance checks of magnification, electron diffraction and energy dispersive X-ray systems as set forth in Table III under Unit II.I.
8. Ensure qualified operator performance by evaluation of replicate analysis and standard sample comparisons as set forth in Table III under Unit II.I.
9. Validate all data entries.
10. Recalculate a percentage of all computations and automatic data reduction steps as specified in Table III under Unit II.I.
11. Record an electron diffraction pattern of one asbestos structure from every five samples that contain asbestos. Verify the identification of the pattern by measurement or comparison of the pattern with patterns collected from standards under the same conditions. The records must also demonstrate that the identification of the pattern has been verified by a qualified individual and that the operator who made the identification is maintaining at least an 80 percent correct visual identification based on his measured patterns.
12. Appropriate logs or records must be maintained by the analytical laboratory verifying that it is in compliance with the mandatory quality assurance procedures.

J. References

For additional background information on this method, the following references should be consulted.

1. ***"Guidance for Controlling Asbestos-Containing Materials in Buildings,"*** EPA 560/5-85-024, June 1985.
2. ***"Measuring Airborne Asbestos Following an Abatement Action,"*** USEPA, Office of Pollution Prevention and Toxics, EPA 600/4-85-049, 1985.
3. Small, John and E. Steel. Asbestos Standards: Materials and Analytical Methods. N.B.S. Special Publication 619, 1982.
4. Campbell, W.J., R.L. Blake, L.L. Brown, E.E. Cather, and J.J. Sjoberg. Selected Silicate Minerals and Their Asbestiform Varieties. Information Circular 8751, U.S. Bureau of Mines, 1977.
5. Quality Assurance Handbook for Air Pollution Measurement System. Ambient Air Methods, EPA 600/4-77-027a, USEPA, Office of Research and Development, 1977.
6. Method 2A: Direct Measurement of Gas Volume through Pipes and Small Ducts. 40 CFR Part 60 Appendix A.

7. Burdette, G.J., Health & Safety Exec. Research & Lab. Services Div., London, "Proposed Analytical Method for Determination of Asbestos in Air."

8. Chatfield, E.J., Chatfield Tech. Cons., Ltd., Clark, T., PEI Assoc., "Standard Operating Procedure for Determination of Airborne Asbestos Fibers by Transmission Electron Microscopy Using Polycarbonate Membrane Filters," WERL SOP 87-1, March 5, 1987.

9. NIOSH Method 7402 for Asbestos Fibers, 12-11-86 Draft.

10. Yamate, G., Agarwall, S.C., Gibbons, R.D., IIT Research Institute, "Methodology for the Measurement of Airborne Asbestos by Electron Microscopy," Draft report, USEPA Contract 68-02-3266, July 1984.

11. ***"Guidance to the Preparation of Quality Assurance Project Plans,"*** USEPA, Office of Pollution Prevention and Toxics, 1984.

III. Nonmandatory Transmission Electron Microscopy Method

A. Definitions of Terms

1. ***Analytical sensitivity*** - Airborne asbestos concentration represented by each fiber counted under the electron microscope. It is determined by the air volume collected and the proportion of the filter examined. This method requires that the analytical sensitivity be no greater than 0.005 s/cm^3.

2. ***Asbestiform*** - A specific type of mineral fibrosity in which the fibers and fibrils possess high tensile strength and flexibility.

3. ***Aspect ratio*** - A ratio of the length to the width of a particle. Minimum aspect ratio as defined by this method is equal to or greater than 5:1.

4. ***Bundle*** - A structure composed of three or more fibers in a parallel arrangement with each fiber closer than one fiber diameter.

5. ***Clean area*** - A controlled environment which is maintained and monitored to assure a low probability of asbestos contamination to materials in that space. Clean areas used in this method have HEPA filtered air under positive pressure and are capable of sustained operation with an open laboratory blank which on subsequent analysis has an average of less than 18 structures/mm^2 in an area of 0.057 mm^2 (nominally 10 200 mesh grid openings) and a maximum of 53 structures/mm^2 for no more than one single preparation for that same area.

6. ***Cluster*** - A structure with fibers in a random arrangement such that all fibers are intermixed and no single fiber is isolated from the group. Groupings must have more than two intersections.

7. ***ED*** - Electron diffraction.

8. ***EDXA*** - Energy dispersive X-ray analysis.

9. ***Fiber*** - A structure greater than or equal to 0.5 µm in length with an aspect ratio (length to width) of 5:1 or greater and having substantially parallel sides.

10. ***Grid*** - An open structure for mounting on the sample to aid in its examination in the TEM. The term is used here to denote a 200-mesh copper lattice approximately 3 mm in diameter.

11. ***Intersection*** - Nonparallel touching or crossing of fibers, with the projection having an aspect ratio of 5:1 or greater.

12. ***Laboratory sample coordinator*** - That person responsible for the conduct of sample handling and the certification of the testing procedures.

13. ***Filter background level*** - The concentration of structures per square millimeter of filter that is considered indistinguishable from the concentration measured on blanks (filters through which no air has been drawn). For this method the filter background level is defined as 70 structures/ mm^2.

14. ***Matrix*** - Fiber or fibers with one end free and the other end embedded in or hidden by a particulate. The exposed fiber must meet the fiber definition.

15. ***NSD*** - No structure detected.

16. ***Operator*** - A person responsible for the TEM instrumental analysis of the sample.

17. ***PCM*** - Phase contrast microscopy.

18. ***SAED*** - Selected area electron diffraction.

19. ***SEM*** - Scanning electron microscope.

20. ***STEM*** - Scanning transmission electron microscope.

21. ***Structure*** - a microscopic bundle, cluster, fiber, or matrix which may contain asbestos.

22. ***S/cm ^{3}*** - Structures per cubic centimeter.

23. ***S/mm ^{2}*** - Structures per square millimeter.

24. ***TEM*** - Transmission electron microscope.

B. Sampling

1. Sampling operations must be performed by qualified individuals completely independent of the abatement contractor to avoid possible conflict of interest (See References 1, 2, and 5 of Unit III.L.) Special precautions should be taken to avoid contamination of the sample. For example, materials that have not been prescreened for their asbestos background content should not be used; also, sample handling procedures which do not take cross contamination possibilities into account should not be used.

2. Material and supply checks for asbestos contamination should be made on all critical supplies, reagents, and procedures before their use in a monitoring study.

3. Quality control and quality assurance steps are needed to identify problem areas and isolate the cause of the contamination (see Reference 5 of Unit III.L.). Control checks shall be permanently recorded to document the quality of the information produced. The sampling firm must have written quality control procedures and documents which verify compliance. Independent audits by a qualified consultant or firm should be performed once a year. All documentation of compliance should be retained indefinitely to provide a guarantee of quality. A summary of Sample Data Quality Objectives is shown in Table II of Unit II.B.

4. Sampling materials.

a. Sample for airborne asbestos following an abatement action using commercially available cassettes.

b. Use either a cowling or a filter-retaining middle piece. Conductive material may reduce the potential for particulates to adhere to the walls of the cowl.

c. Cassettes must be verified as “clean” prior to use in the field. If packaged filters are used for loading or preloaded cassettes are purchased from the manufacturer or a distributor, the manufacturer's name and lot number should be entered on all field data sheets provided to the laboratory, and are required to be listed on all reports from the laboratory.

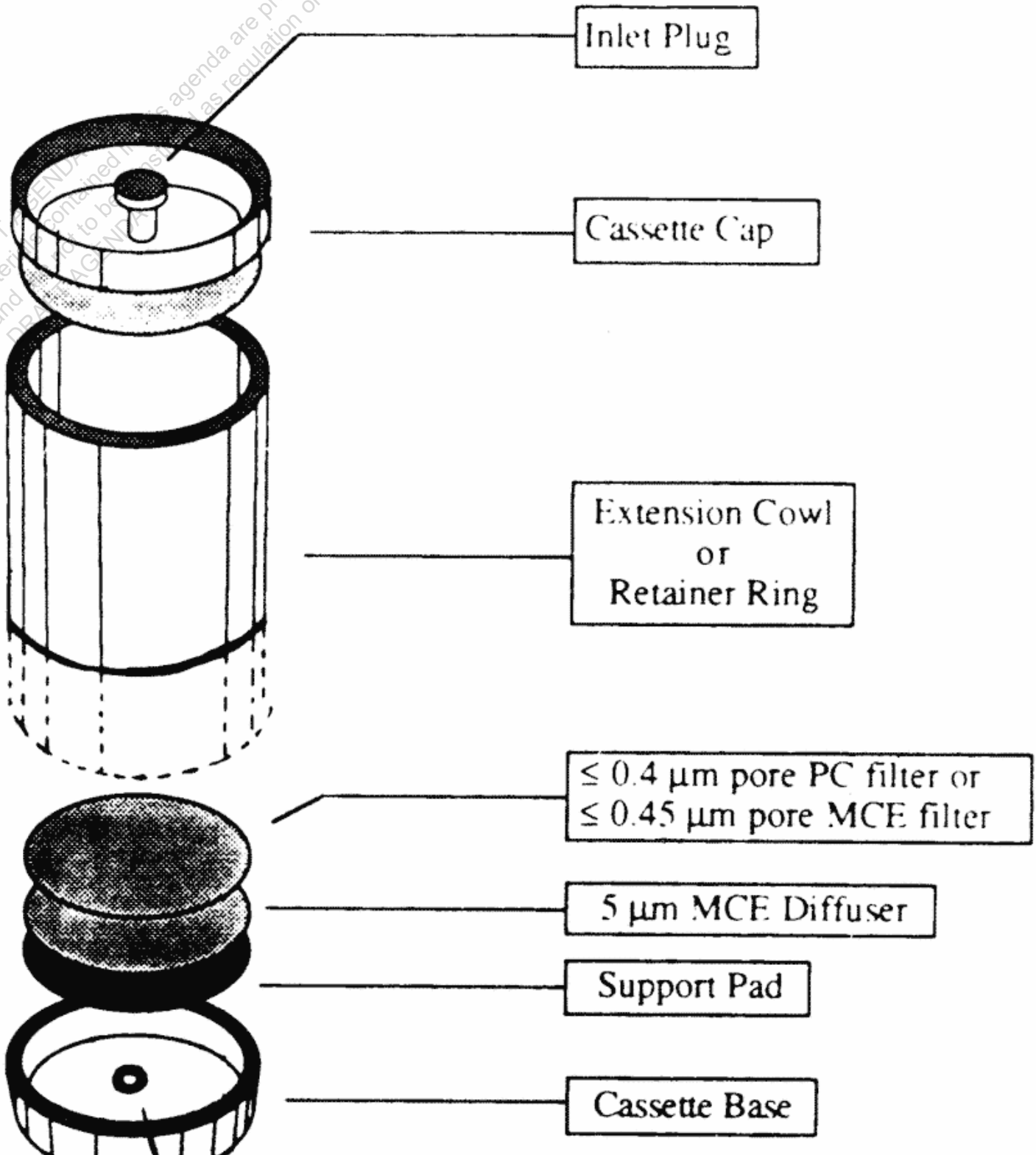
d. Assemble the cassettes in a clean facility (See definition of clean area under Unit III.A.).

e. Reloading of used cassettes is not permitted.

f. Use sample collection filters which are either polycarbonate having a pore size of less than or equal to 0.4 µm or mixed cellulose ester having a pore size of less than or equal to 0.45 µm.

g. Place these filters in series with a backup filter with a pore size of 5.0 µm (to serve as a diffuser) and a support pad. See the following Figure 1:

FIGURE I--SAMPLING CASSETTE CONFIGURATION



h. When polycarbonate filters are used, position the highly reflective face such that the incoming particulate is received on this surface.

i. Seal the cassettes to prevent leakage around the filter edges or between cassette part joints. A mechanical press may be useful to achieve a reproducible leak-free seal. Shrink fit gel-bands may be used for this purpose and are available from filter manufacturers and their authorized distributors.

j. Use wrinkle-free loaded cassettes in the sampling operation.

5. Pump setup.

a. Calibrate the sampling pump over the range of flow rates and loads anticipated for the monitoring period with this flow measuring device in series. Perform this calibration using guidance from EPA Method 2A each time the unit is sent to the field (See Reference 6 of Unit III.L.).

b. Configure the sampling system to preclude pump vibrations from being transmitted to the cassette by using a sampling stand separate from the pump station and making connections with flexible tubing.

c. Maintain continuous smooth flow conditions by damping out any pump action fluctuations if necessary.

d. Check the sampling system for leaks with the end cap still in place and the pump operating before initiating sample collection. Trace and stop the source of any flow indicated by the flowmeter under these conditions.

e. Select an appropriate flow rate equal to or greater than 1 L/min or less than 10 L/min for 25 mm cassettes. Larger filters may be operated at proportionally higher flow rates.

f. Orient the cassette downward at approximately 45 degrees from the horizontal.

g. Maintain a log of all pertinent sampling information, such as pump identification number, calibration data, sample location, date, sample identification number, flow rates at the beginning, middle, and end, start and stop times, and other useful information or comments. Use of a sampling log form is recommended. See the following Figure 2:

FIGURE 2--SAMPLING LOG FORM

Sample Number	Location of Sample	Pump I.D.	Start Time	Middle Time	End Time	Flow Rate

Inspector: _____ Date: _____

h. Initiate a chain of custody procedure at the start of each sampling, if this is requested by the client.

i. Maintain a close check of all aspects of the sampling operation on a regular basis.

j. Continue sampling until at least the minimum volume is collected, as specified in the following Table I:

TABLE 1--NUMBER OF 200 MESH EM GRID OPENINGS ($0.0057\ MM^2$) THAT NEED TO BE ANALYZED TO MAINTAIN SENSITIVITY OF 0.005 STRUCTURES/CC BASED ON VOLUME AND EFFECTIVE FILTER AREA

Effective Filter Area 385 sq mm		Effective Filter Area 855 sq mm	
Volume (liters)	# of grid openings	Volume (liters)	# of grid openings
560	*24*	*1,250*	*24*
600	23	1,300	23
700	19	1,400	21
800	17	1,600	19
900	15	1,800	17
1,000	14	2,000	15
1,100	12	2,200	14
1,200	**11**	2,400	13
1,300	**10**	2,600	12
1,400	**10**	**2,800**	**11**
1,500	**9**	**3,000**	**10**
1,600	**8**	**3,200**	**9**
1,700	**8**	**3,400**	**9**
1,800	**8**	**3,600**	**8**
1,900	7	**3,800**	**8**
2,000	7	**4,000**	**8**
2,100	6	4,200	7
2,200	6	4,400	7
2,300	6	4,600	7
2,400	6	4,800	6
2,500	5	5,000	6
2,600	5	5,200	6
2,700	5	5,400	6
2,800	5	5,600	5
2,900	5	5,800	5
3,000	5	6,000	5
3,100	4	6,200	5
3,200	4	6,400	5
3,300	4	6,600	5
3,400	4	6,800	4
3,500	4	7,000	4
3,600	4	7,200	4
3,700	4	7,400	4
3,800	4	7,600	4

Recommended Volume Range (1,200 – 1,800 liters)

Recommended Volume Range (2,800 – 4,000 liters)

Note minimum volumes required:
25 mm : 560 liters
37 mm : 1250 liters

Filter diameter of 25 mm = effective area of 385 sq mm
Filter diameter of 37 mm = effective area of 855 sq mm

k. At the conclusion of sampling, turn the cassette upward before stopping the flow to minimize possible particle loss. If the sampling is resumed, restart the flow before reorienting the cassette downward. Note the condition of the filter at the conclusion of sampling.

l. Double check to see that all information has been recorded on the data collection forms and that the cassette is securely closed and appropriately identified using a waterproof label. Protect cassettes in individual clean resealed polyethylene bags. Bags are to be used for storing cassette caps when they are removed for sampling purposes. Caps and plugs should only be removed or replaced using clean hands or clean disposable plastic gloves.

m. Do not change containers if portions of these filters are taken for other purposes.

6. Minimum sample number per site. A minimum of 13 samples are to be collected for each testing consisting of the following:

a. A minimum of five samples per abatement area.

b. A minimum of five samples per ambient area positioned at locations representative of the air entering the abatement site.

c. Two field blanks are to be taken by removing the cap for not more than 30 sec and replacing it at the time of sampling before sampling is initiated at the following places:

i. Near the entrance to each ambient area.

ii. At one of the ambient sites.

(Note: Do not leave the blank open during the sampling period.)

d. A sealed blank is to be carried with each sample set. This representative cassette is not to be opened in the field.

7. Abatement area sampling.

a. Conduct final clearance sampling only after the primary containment barriers have been removed; the abatement area has been thoroughly dried; and, it has passed visual inspection tests by qualified personnel. (See Reference 1 of Unit III.L.)

b. Containment barriers over windows, doors, and air passageways must remain in place until the TEM clearance sampling and analysis is completed and results meet clearance test criteria. The final plastic barrier remains in place for the sampling period.

c. Select sampling sites in the abatement area on a random basis to provide unbiased and representative samples.

d. After the area has passed a thorough visual inspection, use aggressive sampling conditions to dislodge any remaining dust.

i. Equipment used in aggressive sampling such as a leaf blower and/or fan should be properly cleaned and decontaminated before use.

ii. Air filtration units shall remain on during the air monitoring period.

iii. Prior to air monitoring, floors, ceiling and walls shall be swept with the exhaust of a minimum one (1) horsepower leaf blower.

iv. Stationary fans are placed in locations which will not interfere with air monitoring equipment. Fan air is directed toward the ceiling. One fan shall be used for each 10,000 ft^3 of worksite.

v. Monitoring of an abatement work area with high-volume pumps and the use of circulating fans will require electrical power. Electrical outlets in the abatement area may be used if available. If no such outlets are available, the equipment must be supplied with electricity by the use of extension cords and strip plug units. All electrical power supply equipment of this type must be approved Underwriter Laboratory equipment that has not been modified. All wiring must be grounded. Ground fault interrupters should be used. Extreme care must be taken to clean up any residual water and ensure that electrical equipment does not become wet while operational.

vi. Low volume pumps may be carefully wrapped in 6-mil polyethylene to insulate the pump from the air. High volume pumps cannot be sealed in this manner since the heat of the motor may melt the plastic. The pump exhausts should be kept free.

vii. If recleaning is necessary, removal of this equipment from the work area must be handled with care. It is not possible to completely decontaminate the pump motor and parts since these areas cannot be wetted. To minimize any problems in this area, all equipment such as fans and pumps should be carefully wet wiped prior to removal from the abatement area. Wrapping and sealing low volume pumps in 6-mil polyethylene will provide easier decontamination of this equipment. Use of clean water and disposable wipes should be available for this purpose.

e. Pump flow rate equal to or greater than 1 L/min or less than 10 L/min may be used for 25 mm cassettes. The larger cassette diameters may have comparably increased flow.

f. Sample a volume of air sufficient to ensure the minimum quantitation limits. (See Table I of Unit III.B.5.j.)

8. Ambient sampling.

a. Position ambient samplers at locations representative of the air entering the abatement site. If makeup air entering the abatement site is drawn from another area of the building which is outside of the abatement area, place the pumps in the building, pumps should be placed out of doors located near the building and away from any obstructions that may influence wind patterns. If construction is in progress immediately outside the enclosure, it may be necessary to select another ambient site. Samples should be representative of any air entering the work site.

b. Locate the ambient samplers at least 3 ft apart and protect them from adverse weather conditions.

c. Sample same volume of air as samples taken inside the abatement site.

C. Sample Shipment

1. Ship bulk samples in a separate container from air samples. Bulk samples and air samples delivered to the analytical laboratory in the same container shall be rejected.
2. Select a rigid shipping container and pack the cassettes upright in a noncontaminating nonfibrous medium such as a bubble pack. The use of resealable polyethylene bags may help to prevent jostling of individual cassettes.
3. Avoid using expanded polystyrene because of its static charge potential. Also avoid using particle-based packaging materials because of possible contamination.
4. Include a shipping bill and a detailed listing of samples shipped, their descriptions and all identifying numbers or marks, sampling data, shipper's name, and contact information. For each sample set, designate which are the ambient samples, which are the abatement area samples, which are the field blanks, and which is the sealed blank if sequential analysis is to be performed.
5. Hand-carry samples to the laboratory in an upright position if possible; otherwise choose that mode of transportation least likely to jar the samples in transit.
6. Address the package to the laboratory sample coordinator by name when known and alert him or her of the package description, shipment mode, and anticipated arrival as part of the chain of custody and sample tracking procedures. This will also help the laboratory schedule timely analysis for the samples when they are received.

D. Quality Control/Quality Assurance Procedures (Data Quality Indicators)

Monitoring the environment for airborne asbestos requires the use of sensitive sampling and analysis procedures. Because the test is sensitive, it may be influenced by a variety of factors. These include the supplies used in the sampling operation, the performance of the sampling, the preparation of the grid from the filter and the actual examination of this grid in the microscope. Each of these unit operations must produce a product of defined quality if the analytical result is to be a reliable and meaningful test result. Accordingly, a series of control checks and reference standards is performed along with the sample analysis as indicators that the materials used are adequate and the operations are within acceptable limits. In this way, the quality of the data is defined, and the results are of known value. These checks and tests also provide timely and specific warning of any problems which might develop within the sampling and analysis operations. A description of these quality control/quality assurance procedures is summarized in the text below.

1. Prescreen the loaded cassette collection filters to assure that they do not contain concentrations of asbestos which may interfere with the analysis of the sample. A filter blank average of less than 18 s/mm^2 in an area of 0.057 mm^2 (nominally 10 200-mesh grid openings) and a maximum of 53 s/mm^2 for that same area for any single preparation is acceptable for this method.
2. Calibrate sampling pumps and their flow indicators over the range of their intended use with a recognized standard. Assemble the sampling system with a representative filter - not the filter which will be used in sampling - before and after the sampling operation.
3. Record all calibration information with the data to be used on a standard sampling form.
4. Ensure that the samples are stored in a secure and representative location.

5. Ensure that mechanical calibrations from the pump will be minimized to prevent transferral of vibration to the cassette.
6. Ensure that a continuous smooth flow of negative pressure is delivered by the pump by installing a damping chamber if necessary.
7. Open a loaded cassette momentarily at one of the indoor sampling sites when sampling is initiated. This sample will serve as an indoor field blank.
8. Open a loaded cassette momentarily at one of the outdoor sampling sites when sampling is initiated. This sample will serve as an outdoor field blank.
9. Carry a sealed blank into the field with each sample series. Do not open this cassette in the field.
10. Perform a leak check of the sampling system at each indoor and outdoor sampling site by activating the pump with the closed sampling cassette in line. Any flow indicates a leak which must be eliminated before initiating the sampling operation.
11. Ensure that the sampler is turned upright before interrupting the pump flow.
12. Check that all samples are clearly labeled and that all pertinent information has been enclosed before transfer of the samples to the laboratory.

E. Sample Receiving

1. Designate one individual as sample coordinator at the laboratory. While that individual will normally be available to receive samples, the coordinator may train and supervise others in receiving procedures for those times when he/she is not available.
2. Adhere to the following procedures to ensure both the continued chain-of-custody and the accountability of all samples passing through the laboratory:
    a. Note the condition of the shipping package and data written on it upon receipt.
    b. Retain all bills of lading or shipping slips to document the shipper and delivery time.
    c. Examine the chain-of-custody seal, if any, and the package for its integrity.
    d. If there has been a break in the seal or substantive damage to the package, the sample coordinator shall immediately notify the shipper and a responsible laboratory manager before any action is taken to unpack the shipment.
    e. Packages with significant damage shall be accepted only by the responsible laboratory manager after discussions with the client.
3. Unwrap the shipment in a clean, uncluttered facility. The sample coordinator or his or her designee will record the contents, including a description of each item and all identifying numbers or marks. A Sample Receiving Form to document this information is attached for use when necessary. (See the following Figure 3.)

FIGURE 3--SAMPLE RECEIVING FORM

Date of package delivery _____ Package shipped from _____

Carrier _____ Shipping bill retained _____

*Condition of package on receipt _____

*Condition of custody seal _____

Number of samples received _____ Shipping manifest attached _____

Purchase Order No. _____ Project I.D. _____

Comments _____

No.	Description	Sampling Medium PC	Sampling Medium MCE	Sampled Volume Liters	Receiving ID #	Assigned #
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						
13						

(Use as many additional sheets as needed.)

Comments _____

Date of acceptance into sample bank _____

Signature of chain-of-custody recipient _____

Note: The person breaking the chain-of-custody seal and itemizing the contents assumes responsibility for the shipment and signs documents accordingly.

4. Assign a laboratory number and schedule an analysis sequence.

5. Manage all chain-of-custody samples within the laboratory such that their integrity can be ensured and documented.

F. Sample Preparation

1. Personnel not affiliated with the Abatement Contractor shall be used to prepare samples and conduct TEM analysis. Wet-wipe the exterior of the cassettes to minimize contamination possibilities before taking them to the clean sample preparation facility.

2. Perform sample preparation in a well-equipped clean facility.

Note: The clean area is required to have the following minimum characteristics. The area or hood must be capable of maintaining a positive pressure with make-up air being HEPA filtered. The cumulative analytical blank concentration must average less than 18 s/mm^2 in an area of 0.057 s/mm^2 (nominally 10 200-mesh grid openings) with no more than one single preparation to exceed 53 s/mm^2 for that same area.

3. Preparation areas for air samples must be separated from preparation areas for bulk samples. Personnel must not prepare air samples if they have previously been preparing bulk samples without performing appropriate personal hygiene procedures, i.e., clothing change, showering, etc.

4. ***Preparation.*** Direct preparation techniques are required. The objective is to produce an intact carbon film containing the particulates from the filter surface which is sufficiently clear for TEM analysis. Currently recommended direct preparation procedures for polycarbonate (PC) and mixed cellulose ester (MCE) filters are described in Unit III.F.7. and 8. Sample preparation is a subject requiring additional research. Variation on those steps which do not substantively change the procedure, which improve filter clearing or which reduce contamination problems in a laboratory are permitted.

   a. Use only TEM grids that have had grid opening areas measured according to directions in Unit III.J.

   b. Remove the inlet and outlet plugs prior to opening the cassette to minimize any pressure differential that may be present.

   c. Examples of techniques used to prepare polycarbonate filters are described in Unit III.F.7.

   d. Examples of techniques used to prepare mixed cellulose ester filters are described in Unit III.F.8.

   e. Prepare multiple grids for each sample.

   f. Store the three grids to be measured in appropriately labeled grid holders or polyethylene capsules.

5. Equipment.

a. Clean area.

b. Tweezers. Fine-point tweezers for handling of filters and TEM grids.

c. Scalpel Holder and Curved No. 10 Surgical Blades.

d. Microscope slides.

e. Double-coated adhesive tape.

f. Gummed page reinforcements.

g. Micro-pipet with disposal tips 10 to 100 µL variable volume.

h. Vacuum coating unit with facilities for evaporation of carbon. Use of a liquid nitrogen cold trap above the diffusion pump will minimize the possibility of contamination of the filter surface by oil from the pumping system. The vacuum-coating unit can also be used for deposition of a thin film of gold.

i. ***Carbon rod electrodes.*** Spectrochemically pure carbon rods are required for use in the vacuum evaporator for carbon coating of filters.

j. ***Carbon rod sharpener.*** This is used to sharpen carbon rods to a neck. The use of necked carbon rods (or equivalent) allows the carbon to be applied to the filters with a minimum of heating.

k. ***Low-temperature plasma asher.*** This is used to etch the surface of collapsed mixed cellulose ester (MCE) filters. The asher should be supplied with oxygen, and should be modified as necessary to provide a throttle or bleed valve to control the speed of the vacuum to minimize disturbance of the filter. Some early models of ashers admit air too rapidly, which may disturb particulates on the surface of the filter during the etching step.

l. ***Glass petri dishes, 10 cm in diameter, 1 cm high.*** For prevention of excessive evaporation of solvent when these are in use, a good seal must be provided between the base and the lid. The seal can be improved by grinding the base and lid together with an abrasive grinding material.

m. Stainless steel mesh.

n. Lens tissue.

o. Copper 200-mesh TEM grids, 3 mm in diameter, or equivalent.

p. Gold 200-mesh TEM grids, 3 mm in diameter, or equivalent.

q. Condensation washer.

r. Carbon-coated, 200-mesh TEM grids, or equivalent.

s. Analytical balance, 0.1 mg sensitivity.

t. Filter paper, 9 cm in diameter.

u. Oven or slide warmer. Must be capable of maintaining a temperature of 65-70 °C.

v. Polyurethane foam, 6 mm thickness.

w. Gold wire for evaporation.

6. Reagents.

a. ***General.*** A supply of ultra-clean, fiber-free water must be available for washing of all components used in the analysis. Water that has been distilled in glass or filtered or deionized water is satisfactory for this purpose. Reagents must be fiber-free.

b. Polycarbonate preparation method - chloroform.

c. Mixed Cellulose Ester (MCE) preparation method - acetone or the Burdette procedure (Ref. 7 of Unit III.L.).

7. TEM specimen preparation from polycarbonate filters.

a. ***Specimen preparation laboratory.*** It is most important to ensure that contamination of TEM specimens by extraneous asbestos fibers is minimized during preparation.

b. Cleaning of sample cassettes. Upon receipt at the analytical laboratory and before they are taken into the clean facility or laminar flow hood, the sample cassettes must be cleaned of any contamination adhering to the outside surfaces.

c. Preparation of the carbon evaporator. If the polycarbonate filter has already been carbon-coated prior to receipt, the carbon coating step will be omitted, unless the analyst believes the carbon film is too thin. If there is a need to apply more carbon, the filter will be treated in the same way as an uncoated filter. Carbon coating must be performed with a high-vacuum coating unit. Units that are based on evaporation of carbon filaments in a vacuum generated only by an oil rotary pump have not been evaluated for this application, and must not be used. The carbon rods should be sharpened by a carbon rod sharpener to necks of about 4 mm long and 1 mm in diameter. The rods are installed in the evaporator in such a manner that the points are approximately 10 to 12 cm from the surface of a microscope slide held in the rotating and tilting device.

d. Selection of filter area for carbon coating. Before preparation of the filters, a 75 mm × 50 mm microscope slide is washed and dried. This slide is used to support strips of filter during the carbon evaporation. Two parallel strips of double-sided adhesive tape are applied along the length of the slide. Polycarbonate filters are easily stretched during handling, and cutting of areas for further preparation must be performed with great care. The filter and the MCE backing filter are removed together from the cassette and placed on a cleaned glass microscope slide. The filter can be cut with a curved scalpel blade by rocking the blade from the point placed in contact with the filter. The process can be repeated to cut a strip approximately 3 mm wide across the diameter of the filter. The strip of polycarbonate filter is separated from the corresponding strip of backing filter and carefully placed so that it bridges the gap between the adhesive tape strips on the microscope slide. The filter strip can be held with fine-point tweezers and supported underneath by the scalpel blade during placement on the microscope slide. The analyst can place several such strips on the same microscope slide, taking care to rinse and wet-wipe the scalpel blade and tweezers before handling a new sample. The filter strips should be identified by etching the glass slide or marking the slide using a marker insoluble in water and solvents. After the filter strip has been cut from each filter, the residual parts of

the filter must be returned to the cassette and held in position by reassembly of the cassette. The cassette will then be archived for a period of 30 days or returned to the client upon request.

e. Carbon coating of filter strips. The glass slide holding the filter strips is placed on the rotation-tilting device, and the evaporator chamber is evacuated. The evaporation must be performed in very short bursts, separated by some seconds to allow the electrodes to cool. If evaporation is too rapid, the strips of polycarbonate filter will begin to curl, which will lead to cross-linking of the surface material and make it relatively insoluble in chloroform. An experienced analyst can judge the thickness of carbon film to be applied, and some test should be made first on unused filters. If the film is too thin, large particles will be lost from the TEM specimen, and there will be few complete and undamaged grid openings on the specimen. If the coating is too thick, the filter will tend to curl when exposed to chloroform vapor and the carbon film may not adhere to the support mesh. Too thick a carbon film will also lead to a TEM image that is lacking in contrast, and the ability to obtain ED patterns will be compromised. The carbon film should be as thin as possible and remain intact on most of the grid openings of the TEM specimen intact.

f. Preparation of the Jaffe washer. The precise design of the Jaffe washer is not considered important, so any one of the published designs may be used. A washer consisting of a simple stainless steel bridge is recommended. Several pieces of lens tissue approximately 1.0 cm × 0.5 cm are placed on the stainless steel bridge, and the washer is filled with chloroform to a level where the meniscus contacts the underside of the mesh, which results in saturation of the lens tissue. See References 8 and 10 of Unit III.L.

g. Placing of specimens into the Jaffe washer. The TEM grids are first placed on a piece of lens tissue so that individual grids can be picked up with tweezers. Using a curved scalpel blade, the analyst excises three 3 mm square pieces of the carbon-coated polycarbonate filter from the filter strip. The three squares are selected from the center of the strip and from two points between the outer periphery of the active surface and the center. The piece of filter is placed on a TEM specimen grid with the shiny side of the TEM grid facing upwards, and the whole assembly is placed boldly onto the saturated lens tissue in the Jaffe washer. If carbon-coated grids are used, the filter should be placed carbon-coated side down. The three excised squares of filters are placed on the same piece of lens tissue. Any number of separate pieces of lens tissue may be placed in the same Jaffe washer. The lid is then placed on the Jaffe washer, and the system is allowed to stand for several hours, preferably overnight.

h. ***Condensation washing.*** It has been found that many polycarbonate filters will not dissolve completely in the Jaffe washer, even after being exposed to chloroform for as long as 3 days. This problem becomes more serious if the surface of the filter was overheated during the carbon evaporation. The presence of undissolved filter medium on the TEM preparation leads to partial or complete obscuration of areas of the sample, and fibers that may be present in these areas of the specimen will be overlooked; this will lead to a low result. Undissolved filter medium also compromises the ability to obtain ED patterns. Before they are counted, TEM grids must be examined critically to determine whether they are adequately cleared of residual filter medium. It has been found that condensation washing of the grids after the initial Jaffe washer treatment, with chloroform as the solvent, clears all residual filter medium in a period of approximately 1 hour. In practice, the piece of lens tissue supporting the specimen grids is transferred to the cold finger of

the condensation washer, and the washer is operated for about 1 hour. If the specimens are cleared satisfactorily by the Jaffe washer alone, the condensation washer step may be unnecessary.

8. TEM specimen preparation from MCE filters.

a. This method of preparing TEM specimens from MCE filters is similar to that specified in NIOSH Method 7402. See References 7, 8, and 9 of Unit III.L.

b. Upon receipt at the analytical laboratory, the sample cassettes must be cleaned of any contamination adhering to the outside surfaces before entering the clean sample preparation area.

c. Remove a section from any quadrant of the sample and blank filters.

d. Place the section on a clean microscope slide. Affix the filter section to the slide with a gummed paged reinforcement or other suitable means. Label the slide with a water and solvent-proof marking pen.

e. Place the slide in a petri dish which contains several paper filters soaked with 2 to 3 mL acetone. Cover the dish. Wait 2 to 4 minutes for the sample filter to fuse and clear.

f. Plasma etching of the collapsed filter is required.

i. The microscope slide to which the collapsed filter pieces are attached is placed in a plasma asher. Because plasma ashers vary greatly in their performance, both from unit to unit and between different positions in the asher chamber, it is difficult to specify the conditions that should be used. This is one area of the method that requires further evaluation. Insufficient etching will result in a failure to expose embedded filters, and too much etching may result in loss of particulate from the surface. As an interim measure, it is recommended that the time for ashing of a known weight of a collapsed filter be established and that the etching rate be calculated in terms of micrometers per second. The actual etching time used for a particular asher and operating conditions will then be set such that a 1-2 μm (10 percent) layer of collapsed surface will be removed.

ii. Place the slide containing the collapsed filters into a low-temperature plasma asher, and etch the filter.

g. Transfer the slide to a rotating stage inside the bell jar of a vacuum evaporator. Evaporate a 1 mm × 5 mm section of graphite rod onto the cleared filter. Remove the slide to a clean, dry, covered petri dish.

h. Prepare a second petri dish as a Jaffe washer with the wicking substrate prepared from filter or lens paper placed on top of a 6 mm thick disk of clean spongy polyurethane foam. Cut a V-notch on the edge of the foam and filter paper. Use the V-notch as a reservoir for adding solvent. The wicking substrate should be thin enough to fit into the petri dish without touching the lid.

i. Place carbon-coated TEM grids face up on the filter or lens paper. Label the grids by marking with a pencil on the filter paper or by putting registration marks on the petri dish lid and marking with a waterproof marker on the dish lid. In a fume hood, fill the dish with acetone until the wicking substrate is saturated. The level of acetone should be just high enough to saturate the filter paper without creating puddles.

j. Remove about a quarter section of the carbon-coated filter samples from the glass slides using a surgical knife and tweezers. Carefully place the section of the filter, carbon side down, on the appropriately labeled grid in the acetone-saturated petri dish. When all filter sections have been transferred, slowly add more solvent to the wedge-shaped trough to bring the acetone level up to the highest possible level without disturbing the sample preparations. Cover the petri dish. Elevate one side of the petri dish by placing a slide under it. This allows drops of condensed solvent vapors to form near the edge rather than in the center where they would drip onto the grid preparation.

G. TEM Method

1. ***Instrumentation.***

a. Use an 80-120 kV TEM capable of performing electron diffraction with a fluorescent screen inscribed with calibrated gradations. If the TEM is equipped with EDXA it must either have a STEM attachment or be capable of producing a spot less than 250 nm in diameter at crossover. The microscope shall be calibrated routinely (see Unit III.J.) for magnification and camera constant.

b. While not required on every microscope in the laboratory, the laboratory must have either one microscope equipped with energy dispersive X-ray analysis or access to an equivalent system on a TEM in another laboratory. This must be an Energy Dispersive X-ray Detector mounted on TEM column and associated hardware/software to collect, save, and read out spectral information. Calibration of Multi-Channel Analyzer shall be checked regularly for A1 at 1.48 KeV and Cu at 8.04 KeV, as well as the manufacturer's procedures.

i. Standard replica grating may be used to determine magnification (e.g., 2160 lines/mm).

ii. Gold standard may be used to determine camera constant.

c. Use a specimen holder with single tilt and/or double tilt capabilities.

2. Procedure.

a. Start a new Count Sheet for each sample to be analyzed. Record on count sheet: analyst's initials and date; lab sample number; client sample number microscope identification; magnification for analysis; number of predetermined grid openings to be analyzed; and grid identification. See the following Figure 4:

FIGURE 4--COUNT SHEET

Lab Sample No. _____ Filter Type _____ Operator _____
Client Sample No. _____ Filter Area _____ Date _____
Instrument I.D. _____ Grid I.D. _____ Comments _____
Magnification _____ Grid Opening (GO) Area _____
Acc. Voltage _____ No. GO to be Analyzed _____

GO	Structure No.	Structure Type*	Length		ED Observation				EDAX
			< 5µm	≥ 5 µm	Chrys.	Amph.	Nonasb.	Neg. ID	

GO	Structure No.	Structure Type*	Length		ED Observation				EDAX
			< 5µm	≥ 5 µm	Chrys.	Amph.	Nonasb.	Neg. ID	

*B = Bundle
C = Cluster
F = Fiber
M = Matrix

NFD = No fibers detected
N = No diffraction obtained

b. Check that the microscope is properly aligned and calibrated according to the manufacturer's specifications and instructions.

c. Microscope settings: 80-120 kV, grid assessment 250-1000X, then 15,000-20,000X screen magnification for analysis.

d. Approximately one-half (0.5) of the predetermined sample area to be analyzed shall be performed on one sample grid preparation and the remaining half on a second sample grid preparation.

e. Determine the suitability of the grid.

i. Individual grid openings with greater than 5 percent openings (holes) or covered with greater than 25 percent particulate matter or obviously having nonuniform loading shall not be analyzed.

ii. Examine the grid at low magnification (<1000X) to determine its suitability for detailed study at higher magnifications.

iii. Reject the grid if:

(1) Less than 50 percent of the grid openings covered by the replica are intact.

(2) It is doubled or folded.

(3) It is too dark because of incomplete dissolution of the filter.

iv. If the grid is rejected, load the next sample grid.

v. If the grid is acceptable, continue on to Step 6 if mapping is to be used; otherwise proceed to Step 7.

f. Grid Map (Optional).

i. Set the TEM to the low magnification mode.

ii. Use flat edge or finder grids for mapping.

iii. Index the grid openings (fields) to be counted by marking the acceptable fields for one-half (0.5) of the area needed for analysis on each of the two grids to be analyzed. These may be marked just before examining each grid opening (field), if desired.

iv. Draw in any details which will allow the grid to be properly oriented if it is reloaded into the microscope and a particular field is to be reliably identified.

g. Scan the grid.

i. Select a field to start the examination.

ii. Choose the appropriate magnification (15,000 to 20,000X screen magnification).

iii. Scan the grid as follows.

(1) At the selected magnification, make a series of parallel traverses across the field. On reaching the end of one traverse, move the image one window and reverse the traverse.

Note: A slight overlap should be used so as not to miss any part of the grid opening (field).

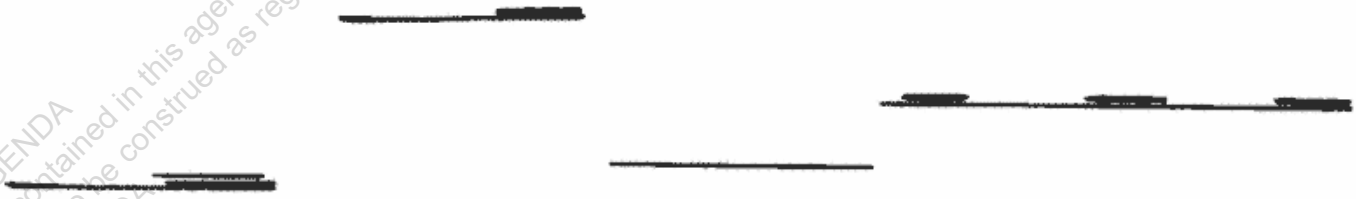
(2) Make parallel traverses until the entire grid opening (field) has been scanned.

h. Identify each structure for appearance and size.

i. Appearance and size: Any continuous grouping of particles in which an asbestos fiber within aspect ratio greater than or equal to 5:1 and a length greater than or equal to 0.5 µm is detected shall be recorded on the count sheet. These will be designated asbestos structures and will be classified as fibers, bundles, clusters, or matrices. Record as individual fibers any contiguous grouping having 0, 1, or 2 definable intersections. Groupings having more than 2 intersections are to be described as cluster or matrix. See the following Figure 5:

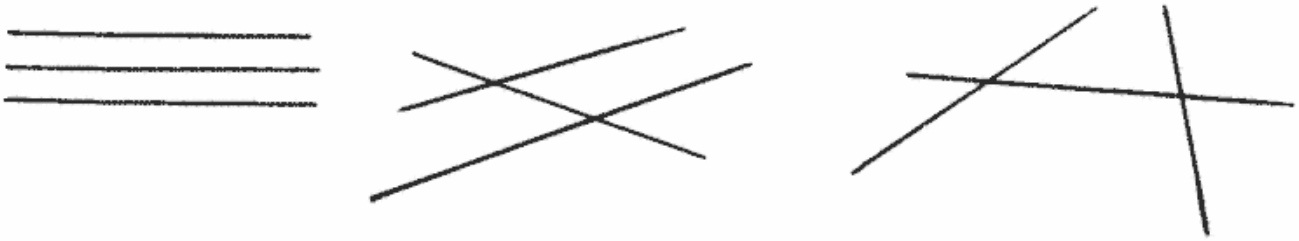
FIGURE 5--COUNTING GUIDELINES USED IN DETERMINING ASBESTOS STRUCTURES

Count as 1 fiber; 1 Structure; no intersections.

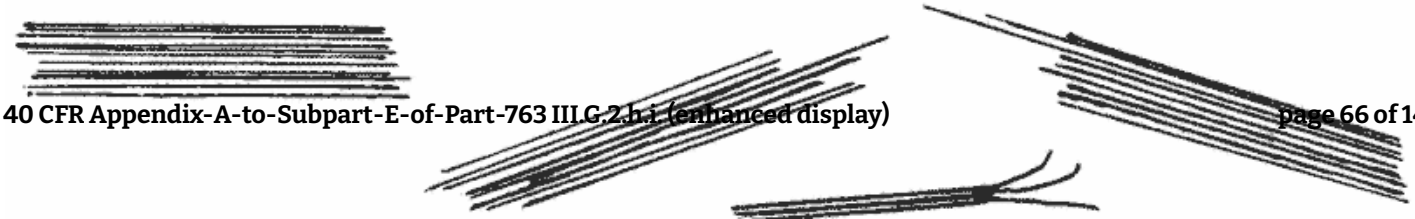


Count as 2 fibers if space between fibers is greater than width of 1 fiber diameter or number of intersections is equal to or less than 1.

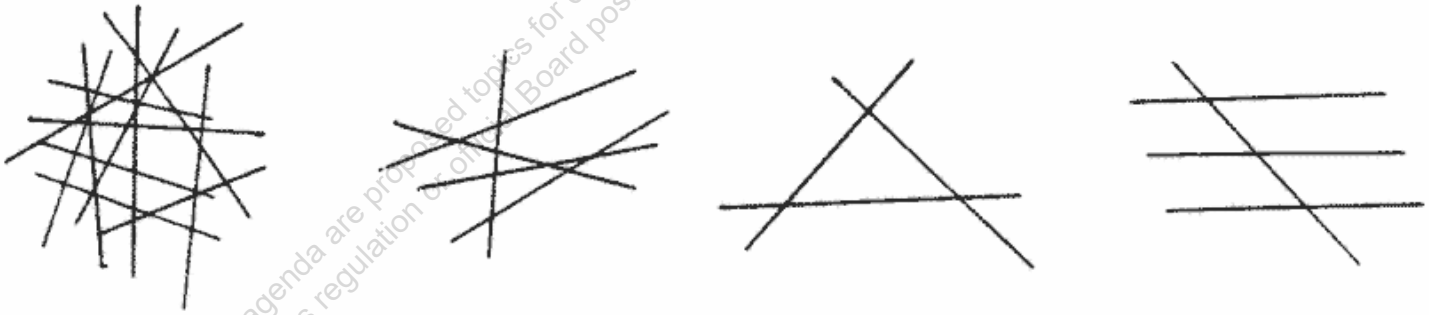
Count as 3 structures if space between fibers is greater than width of 1 fiber diameter or if the number of intersections is equal to or less than 2.



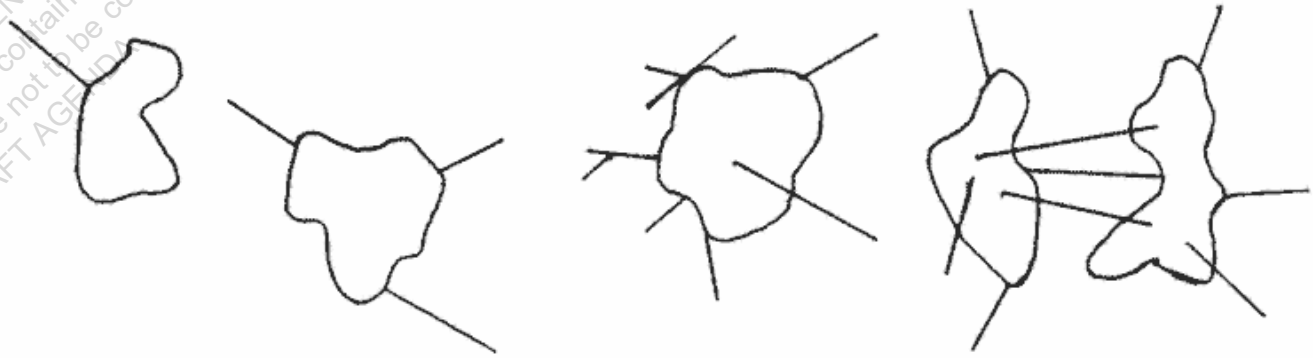
Count bundles as 1 structure; 3 or more parallel fibrils less than 1 fiber diameter separation.



Count clusters as 1 structure; fibers having greater than or equal to 3 intersections.



Count matrix as 1 structure.



DO NOT COUNT AS STRUCTURES:

—— <0.5 micrometer in length
▬ <5:1 Aspect Ratio

An intersection is a non-parallel touching or crossing of fibers, with the projection having an aspect ratio of 5:1 or greater. Combinations such as a matrix and cluster, matrix and bundle, or bundle and cluster are categorized by the dominant fiber quality - cluster, bundle, and matrix, respectively. Separate categories will be maintained for fibers less

than 5 µm and for fibers greater than or equal to 5 µm in length. Not required, but useful, may be to record the fiber length in 1 µm intervals. (Identify each structure morphologically and analyze it as it enters the "window".)

(1) ***Fiber.*** A structure having a minimum length greater than 0.5 µm and an aspect ratio (length to width) of 5:1 or greater and substantially parallel sides. Note the appearance of the end of the fiber, i.e., whether it is flat, rounded or dovetailed, no intersections.

(2) ***Bundle.*** A structure composed of 3 or more fibers in a parallel arrangement with each fiber closer than one fiber diameter.

(3) ***Cluster.*** A structure with fibers in a random arrangement such that all fibers are intermixed and no single fiber is isolated from the group; groupings must have more than 2 intersections.

(4) ***Matrix.*** Fiber or fibers with one end free and the other end embedded in or hidden by a particulate. The exposed fiber must meet the fiber definition.

(5) ***NSD.*** Record NSD when no structures are detected in the field.

(6) ***Intersection.*** Non-parallel touching or crossing of fibers, with the projection having an aspect ratio 5:1 or greater.

ii. Structure Measurement.

(1) Recognize the structure that is to be sized.

(2) Memorize its location in the "window" relative to the sides, inscribed square and to other particulates in the field so this exact location can be found again when scanning is resumed.

(3) Measure the structure using the scale on the screen.

(4) Record the length category and structure type classification on the count sheet after the field number and fiber number.

(5) Return the fiber to its original location in the window and scan the rest of the field for other fibers; if the direction of travel is not remembered, return to the right side of the field and begin the traverse again.

i. Visual identification of Electron Diffraction (ED) patterns is required for each asbestos structure counted which would cause the analysis to exceed the 70 s/mm^2 concentration. (Generally this means the first four fibers identified as asbestos must exhibit an identifiable diffraction pattern for chrysotile or amphibole.)

i. Center the structure, focus, and obtain an ED pattern. (See Microscope Instruction Manual for more detailed instructions.)

ii. From a visual examination of the ED pattern, obtained with a short camera length, classify the observed structure as belonging to one of the following classifications: chrysotile, amphibole, or nonasbestos.

(1) Chrysotile: The chrysotile asbestos pattern has characteristic streaks on the layer lines other than the central line and some streaking also on the central line. There will be spots of normal sharpness on the central layer line and on alternate lines (2nd, 4th, etc.). The repeat distance between layer lines is 0.53 nm and the center doublet is at 0.73 nm. The pattern should display (002), (110), (130) diffraction maxima; distances and geometry should match a chrysotile pattern and be measured semiquantitatively.

(2) Amphibole Group [includes grunerite (amosite), crocidolite, anthophyllite, tremolite, and actinolite]: Amphibole asbestos fiber patterns show layer lines formed by very closely spaced dots, and the repeat distance between layer lines is also about 0.53 nm. Streaking in layer lines is occasionally present due to crystal structure defects.

(3) Nonasbestos: Incomplete or unobtainable ED patterns, a nonasbestos EDXA, or a nonasbestos morphology.

iii. The micrograph number of the recorded diffraction patterns must be reported to the client and maintained in the laboratory's quality assurance records. The records must also demonstrate that the identification of the pattern has been verified by a qualified individual and that the operator who made the identification is maintaining at least an 80 percent correct visual identification based on his measured patterns. In the event that examination of the pattern by the qualified individual indicates that the pattern had been misidentified visually, the client shall be contacted. If the pattern is a suspected chrysotile, take a photograph of the diffraction pattern at 0 degrees tilt. If the structure is suspected to be amphibole, the sample may have to be tilted to obtain a simple geometric array of spots.

j. Energy Dispersive X-Ray Analysis (EDXA).

i. Required of all amphiboles which would cause the analysis results to exceed the 70 s/mm^2 concentration. (Generally speaking, the first 4 amphiboles would require EDXA.)

ii. Can be used alone to confirm chrysotile after the 70 s/mm^2 concentration has been exceeded.

iii. Can be used alone to confirm all nonasbestos.

iv. Compare spectrum profiles with profiles obtained from asbestos standards. The closest match identifies and categorizes the structure.

v. If the EDXA is used for confirmation, record the properly labeled spectrum on a computer disk, or if a hard copy, file with analysis data.

vi. If the number of fibers in the nonasbestos class would cause the analysis to exceed the 70 s/mm^2 concentration, their identities must be confirmed by EDXA or measurement of a zone axis diffraction pattern to establish that the particles are nonasbestos.

k. Stopping Rules.

i. If more than 50 asbestiform structures are counted in a particular grid opening, the analysis may be terminated.

ii. After having counted 50 asbestiform structures in a minimum of 4 grid openings, the analysis may be terminated. The grid opening in which the 50th fiber was counted must be completed.

iii. For blank samples, the analysis is always continued until 10 grid openings have been analyzed.

iv. In all other samples the analysis shall be continued until an analytical sensitivity of 0.005 s/cm^3 is reached.

l. Recording Rules. The count sheet should contain the following information:

i. Field (grid opening): List field number.

ii. Record “NSD” if no structures are detected.

iii. Structure information.

(1) If fibers, bundles, clusters, and/or matrices are found, list them in consecutive numerical order, starting over with each field.

(2) Length. Record length category of asbestos fibers examined. Indicate if less than 5 µm or greater than or equal to 5 µm.

(3) Structure Type. Positive identification of asbestos fibers is required by the method. At least one diffraction pattern of each fiber type from every five samples must be recorded and compared with a standard diffraction pattern. For each asbestos fiber reported, both a morphological descriptor and an identification descriptor shall be specified on the count sheet.

(4) Fibers classified as chrysotile must be identified by diffraction and/or X-ray analysis and recorded on the count sheet. X-ray analysis alone can be used as sole identification only after 70s/mm^2 have been exceeded for a particular sample.

(5) Fibers classified as amphiboles must be identified by X-ray analysis and electron diffraction and recorded on the count sheet. (X-ray analysis alone can be used as sole identification only after 70s/mm^2 have been exceeded for a particular sample.)

(6) If a diffraction pattern was recorded on film, the micrograph number must be indicated on the count sheet.

(7) If an electron diffraction was attempted and an appropriate spectra is not observed, N should be recorded on the count sheet.

(8) If an X-ray analysis is attempted but not observed, N should be recorded on the count sheet.

(9) If an X-ray analysis spectrum is stored, the file and disk number must be recorded on the count sheet.

m. Classification Rules.

i. ***Fiber.*** A structure having a minimum length greater than or equal to 0.5 µm and an aspect ratio (length to width) of 5:1 or greater and substantially parallel sides. Note the appearance of the end of the fiber, i.e., whether it is flat, rounded or dovetailed.

ii. ***Bundle.*** A structure composed of three or more fibers in a parallel arrangement with each fiber closer than one fiber diameter.

iii. ***Cluster.*** A structure with fibers in a random arrangement such that all fibers are intermixed and no single fiber is isolated from the group. Groupings must have more than two intersections.

iv. ***Matrix.*** Fiber or fibers with one end free and the other end embedded in or hidden by a particulate. The exposed fiber must meet the fiber definition.

v. ***NSD.*** Record NSD when no structures are detected in the field.

n. After all necessary analyses of a particle structure have been completed, return the goniometer stage to 0 degrees, and return the structure to its original location by recall of the original location.

o. Continue scanning until all the structures are identified, classified and sized in the field.

p. Select additional fields (grid openings) at low magnification; scan at a chosen magnification (15,000 to 20,000X screen magnification); and analyze until the stopping rule becomes applicable.

q. Carefully record all data as they are being collected, and check for accuracy.

r. After finishing with a grid, remove it from the microscope, and replace it in the appropriate grid hold. Sample grids must be stored for a minimum of 1 year from the date of the analysis; the sample cassette must be retained for a minimum of 30 days by the laboratory or returned at the client's request.

H. Sample Analytical Sequence

1. Carry out visual inspection of work site prior to air monitoring.
2. Collect a minimum of five air samples inside the work site and five samples outside the work site. The indoor and outdoor samples shall be taken during the same time period.
3. Analyze the abatement area samples according to this protocol. The analysis must meet the 0.005 s/cm^3 analytical sensitivity.
4. Remaining steps in the analytical sequence are contained in Unit IV. of this Appendix.

I. Reporting

The following information must be reported to the client. See the following Table II:

TABLE II--EXAMPLE LABORATORY LETTERHEAD

Laboratory I.D.	Client I.D.	FILTER MEDIA DATA				Analyzed Area, mm^2	Sample Volume, cc
		Type	Diameter, mm	Effective Area, mm^2	Pore Size, µm		

INDIVIDUAL ANALYTICAL RESULTS

Laboratory I.D.	Client I.D.	# Asbestos Structures	Analytical Sensitivity, s/cc	CONCENTRATION	
				Structures/mm^2	Structures/cc

The analysis was carried out to the approved TEM method. This laboratory is in compliance with the quality specified by the method.

Authorized Signature

1. Concentration in structures per square millimeter and structures per cubic centimeter.
2. Analytical sensitivity used for the analysis.
3. Number of asbestos structures.
4. Area analyzed.
5. Volume of air samples (which was initially provided by client).
6. Average grid size opening.
7. Number of grids analyzed.
8. Copy of the count sheet must be included with the report.
9. Signature of laboratory official to indicate that the laboratory met specifications of the AHERA method.
10. Report form must contain official laboratory identification (e.g., letterhead).
11. Type of asbestos.

J. Calibration Methodology

Note: Appropriate implementation of the method requires a person knowledgeable in electron diffraction and mineral identification by ED and EDXA. Those inexperienced laboratories wishing to develop capabilities may acquire necessary knowledge through analysis of appropriate standards and by following detailed methods as described in References 8 and 10 of Unit III.L.

1. ***Equipment Calibration.*** In this method, calibration is required for the air-sampling equipment and the transmission electron microscope (TEM).
    a. ***TEM Magnification.*** The magnification at the fluorescent screen of the TEM must be calibrated at the grid opening magnification (if used) and also at the magnification used for fiber counting. This is performed with a cross grating replica. A logbook must be maintained, and the dates of calibration depend on the past history of the particular microscope; no frequency is specified. After any maintenance of the microscope that involved adjustment of the power supplied to the lenses or the high-voltage system or the mechanical disassembly of the electron optical column apart from filament exchange, the magnification must be recalibrated. Before the TEM calibration is performed, the analyst must ensure that the cross grating replica is placed at the same distance from the objective lens as the specimens are. For instruments that incorporate an eucentric tilting specimen stage, all speciments and the cross grating replica must be placed at the eucentric position.
    b. Determination of the TEM magnification on the fluorescent screen.
        i. Define a field of view on the fluorescent screen either by markings or physical boundaries. The field of view must be measurable or previously inscribed with a scale or concentric circles (all scales should be metric).

ii. Insert a diffraction grating replica (for example a grating containing 2,160 lines/mm) into the specimen holder and place into the microscope. Orient the replica so that the grating lines fall perpendicular to the scale on the TEM fluorescent screen. Ensure that the goniometer stage tilt is 0 degrees.

iii. Adjust microscope magnification to 10,000X or 20,000X. Measure the distance (mm) between two widely separated lines on the grating replica. Note the number of spaces between the lines. Take care to measure between the same relative positions on the lines (e.g., between left edges of lines).

Note: The more spaces included in the measurement, the more accurate the final calculation. On most microscopes, however, the magnification is substantially constant only within the central 8-10 cm diameter region of the fluorescent screen.

iv. Calculate the true magnification (M) on the fluorescent screen:

M = XG/Y

where:

X = total distance (mm) between the designated grating lines;

G = calibration constant of the grating replica (lines/mm):

Y = number of grating replica spaces counted along X.

c. Calibration of the EDXA System. Initially, the EDXA system must be calibrated by using two reference elements to calibrate the energy scale of the instrument. When this has been completed in accordance with the manufacturer's instructions, calibration in terms of the different types of asbestos can proceed. The EDXA detectors vary in both solid angle of detection and in window thickness. Therefore, at a particular accelerating voltage in use on the TEM, the count rate obtained from specific dimensions of fiber will vary both in absolute X-ray count rate and in the relative X-ray peak heights for different elements. Only a few minerals are relevant for asbestos abatement work, and in this procedure the calibration is specified in terms of a “fingerprint” technique. The EDXA spectra must be recorded from individual fibers of the relevant minerals, and identifications are made on the basis of semiquantitative comparisons with these reference spectra.

d. Calibration of Grid Openings.

i. Measure 20 grid openings on each of 20 random 200-mesh copper grids by placing a grid on a glass slide and examining it under the PCM. Use a calibrated graticule to measure the average field diameter and use this number to calculate the field area for an average grid opening. Grids are to be randomly selected from batches up to 1,000.

Note: A grid opening is considered as one field.

ii. The mean grid opening area must be measured for the type of specimen grids in use. This can be accomplished on the TEM at a properly calibrated low magnification or on an optical microscope at a magnification of approximately 400X by using an eyepiece fitted with a scale that has been calibrated against a stage micrometer. Optical microscopy utilizing manual or automated procedures may be used providing instrument calibration can be verified.

e. Determination of Camera Constant and ED Pattern Analysis.

i. The camera length of the TEM in ED operating mode must be calibrated before ED patterns on unknown samples are observed. This can be achieved by using a carbon-coated grid on which a thin film of gold has been sputtered or evaporated. A thin film of gold is evaporated on the specimen TEM grid to obtain zone-axis ED patterns superimposed with a ring pattern from the polycrystalline gold film.

ii. In practice, it is desirable to optimize the thickness of the gold film so that only one or two sharp rings are obtained on the superimposed ED pattern. Thicker gold film would normally give multiple gold rings, but it will tend to mask weaker diffraction spots from the unknown fibrous particulates. Since the unknown d-spacings of most interest in asbestos analysis are those which lie closest to the transmitted beam, multiple gold rings are unnecessary on zone-axis ED patterns. An average camera constant using multiple gold rings can be determined. The camera constant is one-half the diameter, D, of the rings times the interplanar spacing, d, of the ring being measured.

K. Quality Control/Quality Assurance Procedures (Data Quality Indicators)

Monitoring the environment for airborne asbestos requires the use of sensitive sampling and analysis procedures. Because the test is sensitive, it may be influenced by a variety of factors. These include the supplies used in the sampling operation, the performance of the sampling, the preparation of the grid from the filter and the actual examination of this grid in the microscope. Each of these unit operations must produce a product of defined quality if the analytical result is to be a reliable and meaningful test result. Accordingly, a series of control checks and reference standards is performed along with the sample analysis as indicators that the materials used are adequate and the operations are within acceptable limits. In this way, the quality of the data is defined and the results are of known value. These checks and tests also provide timely and specific warning of any problems which might develop within the sampling and analysis operations. A description of these quality control/quality assurance procedures is summarized in the following Table III:

TABLE III--SUMMARY OF LABORATORY DATA QUALITY OBJECTIVES

Unit Operation	QC Check	Frequency	Conformance Expectation
Sample receiving	Review of receiving report	Each sample	95% complete
Sample custody	Review of chain-of-custody record	Each sample	95% complete
Sample preparation	Supplies and reagents	On receipt	Meet specs. or reject
	Grid opening size	20 openings/20 grids/lot of 1000 or 1 opening/sample	100%
	Special clean area monitoring	After cleaning or service	Meet specs or reclean
	Laboratory blank	1 per prep series or 10%	Meet specs. or reanalyze series
	Plasma etch blank	1 per 20 samples	75%
	Multiple preps (3 per sample)	Each sample	One with cover of 15 complete grid sqs.
Sample analysis	System check	Each day	Each day
	Alignment check	Each day	Each day
	Magnification calibration with low and high standards	Each month or after service	95%
	ED calibration by gold standard	Weekly	95%
	EDS calibration by copper line	Daily	95%
Performance check	Laboratory blank (measure of cleanliness)	Prep 1 per series or 10% read 1 per 25 samples	Meet specs or reanalyze series
	Replicate counting (measure of precision)	1 per 100 samples	1.5 x Poisson Std. Dev.
	Duplicate analysis (measure of reproducibility)	1 per 100 samples	2 x Poisson Std. Dev.
	Known samples of typical materials (working standards)	Training and for comparison with unknowns	100%
	Analysis of NBS SRM 1876 and/or RM 8410 (measure of accuracy and comparability)	1 per analyst per year	1.5 x Poisson Std. Dev.
	Data entry review (data validation and measure of completeness)	Each sample	95%
	Record and verify ID electron diffraction pattern of structure	1 per 5 samples	80% accuracy
Calculations and data reduction	Hand calculation of automated data reduction procedure or independent recalculation of hand-calculated data	1 per 100 samples	85%

1. When the samples arrive at the laboratory, check the samples and documentation for completeness and requirements before initiating the analysis.

2. Check all laboratory reagents and supplies for acceptable asbestos background levels.

3. Conduct all sample preparation in a clean room environment monitored by laboratory blanks and special testing after cleaning or servicing the room.
4. Prepare multiple grids of each sample.
5. Provide laboratory blanks with each sample batch. Maintain a cumulative average of these results. If this average is greater than 53 f/mm^2 per 10 200-mesh grid openings, check the system for possible sources of contamination.
6. Check for recovery of asbestos from cellulose ester filters submitted to plasma asher.
7. Check for asbestos carryover in the plasma asher by including a blank alongside the positive control sample.
8. Perform a systems check on the transmission electron microscope daily.
9. Make periodic performance checks of magnification, electron diffraction and energy dispersive X-ray systems as set forth in Table III of Unit III.K.
10. Ensure qualified operator performance by evaluation of replicate counting, duplicate analysis, and standard sample comparisons as set forth in Table III of Unit III.K.
11. Validate all data entries.
12. Recalculate a percentage of all computations and automatic data reduction steps as specified in Table III.
13. Record an electron diffraction pattern of one asbestos structure from every five samples that contain asbestos. Verify the identification of the pattern by measurement or comparison of the pattern with patterns collected from standards under the same conditions.

The outline of quality control procedures presented above is viewed as the minimum required to assure that quality data is produced for clearance testing of an asbestos abated area. Additional information may be gained by other control tests. Specifics on those control procedures and options available for environmental testing can be obtained by consulting References 6, 7, and 11 of Unit III.L.

L. References

For additional background information on this method the following references should be consulted.

1. ***"Guidelines for Controlling Asbestos-Containing Materials in Buildings,"*** EPA 560/5-85-024, June 1985.
2. ***"Measuring Airborne Asbestos Following an Abatement Action,"*** USEP/Office of Pollution Prevention and Toxics, EPA 600/4-85-049, 1985.
3. Small, John and E. Steel. Asbestos Standards: Materials and Analytical Methods. N.B.S. Special Publication 619, 1982.
4. Campbell, W.J., R.L. Blake, L.L. Brown, E.E. Cather, and J.J. Sjoberg. Selected Silicate Minerals and Their Asbestiform Varieties. Information Circular 8751, U.S. Bureau of Mines, 1977.
5. Quality Assurance Handbook for Air Pollution Measurement System. Ambient Air Methods, EPA 600/4-77-027a, USEPA, Office of Research and Development, 1977.

6. Method 2A: Direct Measurement of Gas Volume Through Pipes and Small Ducts. 40 CFR Part 60 Appendix A.

7. Burdette, G.J. Health & Safety Exec., Research & Lab. Services Div., London, "Proposed Analytical Method for Determination of Asbestos in Air."

8. Chatfield, E.J., Chatfield Tech. Cons., Ltd., Clark, T., PEI Assoc. "Standard Operating Procedure for Determination of Airborne Asbestos Fibers by Transmission Electron Microscopy Using Polycarbonate Membrane Filters." WERL SOP 87-1, March 5, 1987.

9. NIOSH. Method 7402 for Asbestos Fibers, December 11, 1986 Draft.

10. Yamate, G., S.C. Agarwall, R.D. Gibbons, IIT Research Institute, "Methodology for the Measurement of Airborne Asbestos by Electron Microscopy." Draft report, USEPA Contract 68-02-3266, July 1984.

11. Guidance to the Preparation of Quality Assurance Project Plans. USEPA, Office of Pollution Prevention and Toxics, 1984.

IV. Mandatory Interpretation of Transmission Electron Microscopy Results To Determine Completion of Response Actions

A. Introduction

A response action is determined to be completed by TEM when the abatement area has been cleaned and the airborne asbestos concentration inside the abatement area is no higher than concentrations at locations outside the abatement area. "Outside" means outside the abatement area, but not necessarily outside the building. EPA reasons that an asbestos removal contractor cannot be expected to clean an abatement area to an airborne asbestos concentration that is lower than the concentration of air entering the abatement area from outdoors or from other parts of the building. After the abatement area has passed a thorough visual inspection, and before the outer containment barrier is removed, a minimum of five air samples inside the abatement area and a minimum of five air samples outside the abatement area must be collected. Hence, the response action is determined to be completed when the average airborne asbestos concentration measured inside the abatement area is not statistically different from the average airborne asbestos concentration measured outside the abatement area.

The inside and outside concentrations are compared by the Z-test, a statistical test that takes into account the variability in the measurement process. A minimum of five samples inside the abatement area and five samples outside the abatement area are required to control the false negative error rate, i.e., the probability of declaring the removal complete when, in fact, the air concentration inside the abatement area is significantly higher than outside the abatement area. Additional quality control is provided by requiring three blanks (filters through which no air has been drawn) to be analyzed to check for unusually high filter contamination that would distort the test results.

When volumes greater than or equal to 1,199 L for a 25 mm filter and 2,799 L for a 37 mm filter have been collected and the average number of asbestos structures on samples inside the abatement area is no greater than 70 s/mm^2 of filter, the response action may be considered complete without comparing the inside samples to the outside samples. EPA is permitting this initial screening test to

save analysis costs in situations where the airborne asbestos concentration is sufficiently low so that it cannot be distinguished from the filter contamination/background level (fibers deposited on the filter that are unrelated to the air being sampled). The screening test cannot be used when volumes of less than 1,199 L for 25 mm filter or 2,799 L for a 37 mm filter are collected because the ability to distinguish levels significantly different from filter background is reduced at low volumes.

The initial screening test is expressed in structures per square millimeter of filter because filter background levels come from sources other than the air being sampled and cannot be meaningfully expressed as a concentration per cubic centimeter of air. The value of 70 s/mm^2 is based on the experience of the panel of microscopists who consider one structure in 10 grid openings (each grid opening with an area of 0.0057 mm^2) to be comparable with contamination/background levels of blank filters. The decision is based, in part, on Poisson statistics which indicate that four structures must be counted on a filter before the fiber count is statistically distinguishable from the count for one structure. As more information on the performance of the method is collected, this criterion may be modified. Since different combinations of the number and size of grid openings are permitted under the TEM protocol, the criterion is expressed in structures per square millimeter of filter to be consistent across all combinations. Four structures per 10 grid openings corresponds to approximately 70 s/mm^2.

B. Sample Collection and Analysis

1. A minimum of 13 samples is required: five samples collected inside the abatement area, five samples collected outside the abatement area, two field blanks, and one sealed blank.

2. Sampling and TEM analysis must be done according to either the mandatory or nonmandatory protocols in Appendix A. At least 0.057 mm^2 of filter must be examined on blank filters.

C. Interpretation of Results

1. The response action shall be considered complete if either:

   a. Each sample collected inside the abatement area consists of at least 1,199 L of air for a 25 mm filter, or 2,799 L of air for a 37 mm filter, and the arithmetic mean of their asbestos structure concentrations per square millimeter of filter is less than or equal to 70 s/mm^2; or

   b. The three blank samples have an arithmetic mean of the asbestos structure concentration on the blank filters that is less than or equal to 70 s/mm^2 and the average airborne asbestos concentration measured inside the abatement area is not statistically higher than the average airborne asbestos concentration measured outside the abatement area as determined by the Z-test. The Z-test is carried out by calculating

$$Z = \frac{\bar{Y}_I - \bar{Y}_O}{0.8\left(1/n_I + 1/n_O\right)^{1/2}}$$

where Y_I is the average of the natural logarithms of the inside samples and Y_O is the average of the natural logarithms of the outside samples, n_I is the number of inside samples and n_O is the number of outside samples. The response action is considered complete if Z is less than or equal to 1.65.

Note: When no fibers are counted, the calculated detection limit for that analysis is inserted for the concentration.

2. If the abatement site does not satisfy either (1) or (2) of this Section C, the site must be recleaned and a new set of samples collected.

D. Sequence for Analyzing Samples

It is possible to determine completion of the response action without analyzing all samples. Also, at any point in the process, a decision may be made to terminate the analysis of existing samples, reclean the abatement site, and collect a new set of samples. The following sequence is outlined to minimize the number of analyses needed to reach a decision.

1. Analyze the inside samples.
2. If at least 1,199 L of air for a 25 mm filter or 2,799 L of air for a 37 mm filter is collected for each inside sample and the arithmetic mean concentration of structures per square millimeter of filter is less than or equal to 70 s/mm^2, the response action is complete and no further analysis is needed.
3. If less than 1,199 L of air for a 25 mm filter or 2,799 L of air for a 37 mm filter is collected for any of the inside samples, or the arithmetic mean concentration of structures per square millimeter of filter is greater than 70 s/mm^2, analyze the three blanks.
4. If the arithmetic mean concentration of structures per square millimeter on the blank filters is greater than 70 s/mm^2, terminate the analysis, identify and correct the source of blank contamination, and collect a new set of samples.
5. If the arithmetic mean concentration of structures per square millimeter on the blank filters is less than or equal to 70 s/mm^2, analyze the outside samples and perform the Z-test.
6. If the Z-statistic is less than or equal to 1.65, the response action is complete. If the Z-statistic is greater than 1.65, reclean the abatement site and collect a new set of samples.

[52 FR 41857, Oct. 30, 1987]

Appendix B to Subpart E of Part 763 [Reserved]

Appendix C to Subpart E of Part 763 - Asbestos Model Accreditation Plan

I. Asbestos Model Accreditation Plan for States

The Asbestos Model Accreditation Plan (MAP) for States has eight components:

(A) Definitions

(B) Initial Training

(C) Examinations

(D) Continuing Education

(E) Qualifications

(F) Recordkeeping Requirements for Training Providers

(G) Deaccreditation

(H) Reciprocity

(I) Electronic reporting

A. Definitions

For purposes of Appendix C:

1. ***"Friable asbestos-containing material (ACM)"*** means any material containing more than one percent asbestos which has been applied on ceilings, walls, structural members, piping, duct work, or any other part of a building, which when dry, may be crumbled, pulverized, or reduced to powder by hand pressure. The term includes non-friable asbestos-containing 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.

2. ***"Friable asbestos-containing building material (ACBM)"*** means any friable ACM that is in or on interior structural members or other parts of a school or public and commercial building.

3. ***"Inspection"*** means an activity undertaken in a school building, or a public and commercial building, to determine the presence or location, or to assess the condition of, friable or non-friable asbestos-containing building material (ACBM) or suspected ACBM, whether by visual or physical examination, or by collecting samples of such material. This term includes reinspections of friable and non-friable known or assumed ACBM which has been previously identified. The term does not include the following:

   a. Periodic surveillance of the type described in 40 CFR 763.92(b) solely for the purpose of recording or reporting a change in the condition of known or assumed ACBM;

   b. Inspections performed by employees or agents of Federal, State, or local government solely for the purpose of determining compliance with applicable statutes or regulations; or

   c. visual inspections of the type described in 40 CFR 763.90(i) solely for the purpose of determining completion of response actions.

4. ***"Major fiber release episode"*** means any uncontrolled or unintentional disturbance of ACBM, resulting in a visible emission, which involves the falling or dislodging of more than 3 square or linear feet of friable ACBM.

5. ***"Minor fiber release episode"*** means any uncontrolled or unintentional disturbance of ACBM, resulting in a visible emission, which involves the falling or dislodging of 3 square or linear feet or less of friable ACBM.

6. ***"Public and commercial building"*** means the interior space of any building which is not a school building, except that the term does not include any residential apartment building of fewer than 10 units or detached single-family homes. The term includes, but is not limited to: industrial and office buildings, residential apartment buildings and

condominiums of 10 or more dwelling units, government-owned buildings, colleges, museums, airports, hospitals, churches, preschools, stores, warehouses and factories. Interior space includes exterior hallways connecting buildings, porticos, and mechanical systems used to condition interior space.

7. ***"Response action"*** means a method, including removal, encapsulation, enclosure, repair, and operation and maintenance, that protects human health and the environment from friable ACBM.

8. ***"Small-scale, short-duration activities (SSSD)"*** are tasks such as, but not limited to:

   a. Removal of asbestos-containing insulation on pipes.

   b. Removal of small quantities of asbestos-containing insulation on beams or above ceilings.

   c. Replacement of an asbestos-containing gasket on a valve.

   d. Installation or removal of a small section of drywall.

   e. Installation of electrical conduits through or proximate to asbestos-containing materials.

   SSSD can be further defined by the following considerations:

   f. Removal of small quantities of ACM only if required in the performance of another maintenance activity not intended as asbestos abatement.

   g. Removal of asbestos-containing thermal system insulation not to exceed amounts greater than those which can be contained in a single glove bag.

   h. Minor repairs to damaged thermal system insulation which do not require removal.

   i. Repairs to a piece of asbestos-containing wallboard.

   j. 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.

B. Initial Training

Training requirements for purposes of accreditation are specified both in terms of required subjects of instruction and in terms of length of training. Each initial training course has a prescribed curriculum and number of days of training. One day of training equals 8 hours, including breaks and lunch. Course instruction must be provided by EPA or State-approved instructors. EPA or State instructor approval shall be based upon a review of the instructor's academic credentials and/or field experience in asbestos abatement.

Beyond the initial training requirements, individual States may wish to consider requiring additional days of training for purposes of supplementing hands-on activities or for reviewing relevant state regulations. States also may wish to consider the relative merits of a worker

apprenticeship program. Further, they might consider more stringent minimum qualification standards for the approval of training instructors. EPA recommends that the enrollment in any given course be limited to 25 students so that adequate opportunities exist for individual hands-on experience.

States have the option to provide initial training directly or approve other entities to offer training. The following requirements are for the initial training of persons required to have accreditation under TSCA Title II.

Training requirements for each of the five accredited disciplines are outlined below. Persons in each discipline perform a different job function and distinct role. Inspectors identify and assess the condition of ACBM, or suspect ACBM. Management planners use data gathered by inspectors to assess the degree of hazard posed by ACBM in schools to determine the scope and timing of appropriate response actions needed for schools. Project designers determine how asbestos abatement work should be conducted. Lastly, workers and contractor/supervisors carry out and oversee abatement work. In addition, a recommended training curriculum is also presented for a sixth discipline, which is not federally-accredited, that of "Project Monitor." Each accredited discipline and training curriculum is separate and distinct from the others. A person seeking accreditation in any of the five accredited MAP disciplines cannot attend two or more courses concurrently, but may attend such courses sequentially.

In several instances, initial training courses for a specific discipline (e.g., workers, inspectors) require hands-on training. For asbestos abatement contractor/supervisors and workers, hands-on training should include working with asbestos-substitute materials, fitting and using respirators, use of glovebags, donning protective clothing, and constructing a decontamination unit as well as other abatement work activities.

1. Workers

A person must be accredited as a worker to carry out any of the following activities with respect to friable ACBM in a school or public and commercial building: (1) A response action other than a SSSD activity, (2) a maintenance activity that disturbs friable ACBM other than a SSSD activity, or (3) a response action for a major fiber release episode. All persons seeking accreditation as asbestos abatement workers shall complete at least a 4-day training course as outlined below. The 4-day worker training course shall include lectures, demonstrations, at least 14 hours of hands-on training, individual respirator fit testing, course review, and an examination. Hands-on training must permit workers to have actual experience performing tasks associated with asbestos abatement. A person who is otherwise accredited as a contractor/supervisor may perform in the role of a worker without possessing separate accreditation as a worker.

Because of cultural diversity associated with the asbestos workforce, EPA recommends that States adopt specific standards for the approval of foreign language courses for abatement workers. EPA further recommends the use of audio-visual materials to complement lectures, where appropriate.

The training course shall adequately address the following topics:

(a) ***Physical characteristics of asbestos.*** Identification of asbestos, aerodynamic characteristics, typical uses, and physical appearance, and a summary of abatement control options.

(b) ***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 cancers of other organs.

(c) ***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 facepiece-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.

(d) ***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.

(e) ***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.

(f) ***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.

(g) ***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.

(h) ***Air monitoring.*** Procedures to determine airborne concentrations of asbestos fibers, focusing on how personal air sampling is performed and the reasons for it.

(i) ***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.

(j) ***Establishment of respiratory protection programs.***

(k) ***Course review.*** A review of key aspects of the training course.

2. Contractor/Supervisors

A person must be accredited as a contractor/supervisor to supervise any of the following activities with respect to friable ACBM in a school or public and commercial building: (1) A response action other than a SSSD activity, (2) a maintenance activity that disturbs friable ACBM other than a SSSD activity, or (3) a response action for a major fiber release episode. All persons seeking accreditation as asbestos abatement contractor/supervisors shall complete at least a 5-day training course as outlined below. The training course must include lectures, demonstrations, at least 14 hours of hands-on training, individual respirator fit testing, course review, and a written examination. Hands-on training must permit supervisors to have actual experience performing tasks associated with asbestos abatement.

EPA recommends the use of audiovisual materials to complement lectures, where appropriate.

Asbestos abatement supervisors include those persons who provide supervision and direction to workers performing response actions. Supervisors may include those individuals with the position title of foreman, working foreman, or leadman pursuant to collective bargaining agreements. At least one supervisor is required to be at the worksite at all times while response actions are being conducted. Asbestos workers must have access to accredited supervisors throughout the duration of the project.

The contractor/supervisor training course shall adequately address the following topics:

(a) ***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.

(b) ***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.

(c) ***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 facepiece-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.

(d) ***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, enclosure, 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.

(e) ***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.

(f) ***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.

(g) ***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.

(h) ***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 analyses be performed by laboratories accredited by the National Institute of Standards and Technology's (NIST) National Voluntary Laboratory Accreditation Program (NVLAP).

(i) ***Relevant Federal, State, and local regulatory requirements, procedures, and standards, including:***

(i) Requirements of TSCA Title II.

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

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

(iv) OSHA Asbestos Construction Standard (29 CFR 1926.58).

(v) EPA Worker Protection Rule, (40 CFR part 763, subpart G).

(j) ***Respiratory Protection Programs and Medical Monitoring Programs.***

(k) ***Insurance and liability issues.*** Contractor issues; worker's compensation coverage and exclusions; third-party liabilities and defenses; insurance coverage and exclusions.

(l) ***Recordkeeping for asbestos abatement projects.*** Records required by Federal, State, and local regulations; records recommended for legal and insurance purposes.

(m) ***Supervisory techniques for asbestos abatement activities.*** Supervisory practices to enforce and reinforce the required work practices and discourage unsafe work practices.

(n) ***Contract specifications.*** Discussions of key elements that are included in contract specifications.

(o) ***Course review.*** A review of key aspects of the training course.

3. Inspector

All persons who inspect for ACBM in schools or public and commercial buildings must be accredited. All persons seeking accreditation as an inspector shall complete at least a 3-day training course as outlined below. The course shall include lectures, demonstrations, 4 hours of hands-on training, individual respirator fit-testing, course review, and a written examination.

EPA recommends the use of audiovisual materials to complement lectures, where appropriate. Hands-on training should include conducting a simulated building walk-through inspection and respirator fit testing. The inspector training course shall adequately address the following topics:

(a) ***Background information on asbestos.*** Identification of asbestos, and examples and discussion of the uses and locations of asbestos in buildings; physical appearance of asbestos.

(b) ***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 cancers of other organs.

(c) ***Functions/qualifications and role of inspectors.*** Discussions of prior experience and qualifications for inspectors and management planners; discussions of the functions of an accredited inspector as compared to those of an accredited management planner; discussion of inspection process including inventory of ACM and physical assessment.

(d) ***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.

(e) ***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.

(f) ***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.

(g) ***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.

(h) ***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.

(i) ***Bulk sampling/documentation of asbestos.*** Detailed discussion of the "Simplified Sampling Scheme for Friable Surfacing Materials (EPA 560/5-85-030a October 1985)"; 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.

(j) ***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 facepiece-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.

(k) ***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 TSCA Title II, section 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 conducted for accreditation.

(l) ***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 1926.58); OSHA respirator requirements (29 CFR 1910.134); the Asbestos-Containing Materials in School 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 nonpublic schools or commercial or public buildings.

(m) ***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.

(n) ***Course review.*** A review of key aspects of the training course.

4. Management Planner

All persons who prepare management plans for schools must be accredited. All persons seeking accreditation as management planners shall complete a 3-day inspector training course as outlined above and a 2-day management planner training course. Possession of current and valid inspector accreditation shall be a prerequisite for admission to the management planner training course. The management planner course shall include lectures, demonstrations, course review, and a written examination.

EPA recommends the use of audiovisual materials to complement lectures, where appropriate.

TSCA Title II does not require accreditation for persons performing the management planner role in public and commercial buildings. Nevertheless, such persons may find this training and accreditation helpful in preparing them to design or administer asbestos operations and maintenance programs for public and commercial buildings.

The management planner training course shall adequately address the following topics:

(a) ***Course overview.*** The role and responsibilities of the management planner; operations and maintenance programs; setting work priorities; protection of building occupants.

(b) ***Evaluation/interpretation of survey results.*** Review of TSCA Title II requirements for inspection and management plans for school buildings as given in section 203(i)(1) of TSCA Title II; interpretation of field data and laboratory results; comparison of field inspector's data sheet with laboratory results and site survey.

(c) ***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.

(d) ***Legal implications.*** Liability; insurance issues specific to planners; liabilities associated with interim control measures, in-house maintenance, repair, and removal; use of results from previously performed inspections.

(e) ***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.

(f) ***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.

(g) ***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 renovation in areas with ACM; boiler room maintenance; disposal of ACM; in-house procedures for ACM - bridging and penetrating encapsulants; 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).

(h) ***Regulatory review.*** Focusing on the OSHA Asbestos Construction Standard found at 29 CFR 1926.58; 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; TSCA Title II; applicable State regulations.

(i) ***Recordkeeping for the management planner.*** Use of field inspector's data sheet along with laboratory results; on-going 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.

(j) ***Assembling and submitting the management plan.*** Plan requirements for schools in TSCA Title II section 203(i)(1); the management plan as a planning tool.

(k) ***Financing abatement actions.*** Economic analysis and cost estimates; development of cost estimates; present costs of abatement versus future operation and maintenance costs; Asbestos School Hazard Abatement Act grants and loans.

(l) ***Course review.*** A review of key aspects of the training course.

5. Project Designer

A person must be accredited as a project designer to design any of the following activities with respect to friable ACBM in a school or public and commercial building: (1) A response action other than a SSSD maintenance activity, (2) a maintenance activity that disturbs friable ACBM other than a SSSD maintenance activity, or (3) a response action for a major fiber release episode. All persons seeking accreditation as a project designer shall complete at least a minimum 3-day training course as outlined below. The project designer course shall include lectures, demonstrations, a field trip, course review and a written examination.

EPA recommends the use of audiovisual materials to complement lectures, where appropriate.

The abatement project designer training course shall adequately address the following topics:

(a) ***Background information on asbestos.*** Identification of asbestos; examples and discussion of the uses and locations of asbestos in buildings; physical appearance of asbestos.

(b) ***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 of asbestos-related diseases; a discussion of the relationship between asbestos exposure and asbestosis, lung cancer, mesothelioma, and cancers of other organs.

(c) ***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 1926.58).

(d) ***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.

(e) ***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.

(f) ***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 facepiece-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.

(g) ***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.

(h) ***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; aggressive air movement and negative-pressure exhaust ventilation as a clean-up method.

(i) ***Designing abatement solutions.*** Discussions of removal, enclosure, and encapsulation methods; asbestos waste disposal.

(j) ***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.

EPA recommends the use of TEM for analysis of final air clearance samples. These samples should be analyzed by laboratories accredited under the NIST NVLAP.

(k) ***Budgeting/cost estimating.*** Development of cost estimates; present costs of abatement versus future operation and maintenance costs; setting priorities for abatement jobs to reduce costs.

(l) ***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; replacement of ACM with non-asbestos substitutes.

(m) ***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; particular problems related to abatement drawings.

(n) ***Contract preparation and administration.***

(o) ***Legal/liabilities/defenses.*** Insurance considerations; bonding; hold-harmless clauses; use of abatement contractor's liability insurance; claims made versus occurrence policies.

(p) ***Replacement.*** Replacement of asbestos with asbestos-free substitutes.

(q) ***Role of other consultants.*** Development of technical specification sections by industrial hygienists or engineers; the multi-disciplinary team approach to abatement design.

(r) ***Occupied buildings.*** Special design procedures required in occupied buildings; education of occupants; extra monitoring recommendations; staging of work to minimize occupant exposure; scheduling of renovation to minimize exposure.

(s) ***Relevant Federal, State, and local regulatory requirements, procedures and standards, including, but not limited to:***

(i) Requirements of TSCA Title II.

(ii) National Emission Standards for Hazardous Air Pollutants, (40 CFR part 61) subparts A (General Provisions) and M (National Emission Standard for Asbestos).

(iii) OSHA Respirator Standard found at 29 CFR 1910.134.

(iv) EPA Worker Protection Rule found at 40 CFR part 763, subpart G.

(v) OSHA Asbestos Construction Standard found at 29 CFR 1926.58.

(vi) OSHA Hazard Communication Standard found at 29 CFR 1926.59.

(t) ***Course review.*** A review of key aspects of the training course.

6. Project Monitor

EPA recommends that States adopt training and accreditation requirements for persons seeking to perform work as project monitors. Project monitors observe abatement activities performed by contractors and generally serve as a building owner's representative to ensure that abatement work is completed according to specification and in compliance with all relevant statutes and regulations. They may also perform the vital role of air monitoring for purposes of determining final clearance. EPA recommends that a State seeking to accredit individuals as project monitors consider adopting a minimum 5-day training course covering the topics outlined below. The course outlined below consists of lectures and demonstrations, at least 6 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).

EPA recommends that the project monitor training course adequately address the following topics:

(a) ***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.

(b) ***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.

(c) ***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, subpart G. Overview of pertinent OSHA regulations, including: Construction Industry Standard for Asbestos, 29 CFR

1926.58; Respirator Standard, 29 CFR 1910.134; and the Hazard Communication Standard, 29 CFR 1926.59. Applicable State and local asbestos regulations; regulatory interrelationships.

(d) ***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; renovations and the effect of asbestos abatement on building systems.

(e) ***Asbestos abatement contracts, specifications, and drawings.*** Basic provisions of the contract; relationships between principle parties, establishing chain of command; types of specifications, including means and methods, performance, and proprietary and nonproprietary; reading and interpreting records and abatement drawings; discussion of change orders; common enforcement responsibilities and authority of project monitor.

(f) ***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; contingency planning for emergency response.

(g) ***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; best available technology.

(h) ***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, determining proper backup air volumes.

(i) ***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, sampling in occupied buildings (barrier monitoring).

(j) ***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, hazardous materials on abatement projects.

(k) ***Conducting visual inspections.*** Inspections during abatement, visual inspections using the ASTM E1368 document; conducting inspections for completeness of removal; discussion of “how clean is clean?”

(l) ***Legal responsibilities and liabilities of project monitors.*** Specification enforcement capabilities; regulatory enforcement; licensing; powers delegated to project monitors through contract documents.

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

(n) ***Workshops (6 hours spread over 3 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 cleanliness.

C. Examinations

1. Each State shall administer a closed book examination or designate other entities such as State-approved providers of training courses to administer the closed-book examination to persons seeking accreditation who have completed an initial training course. Demonstration testing may also be included as part of the examination. A person seeking initial accreditation in a specific discipline must pass the examination for that discipline in order to receive accreditation. For example, a person seeking accreditation as an abatement project designer must pass the State's examination for abatement project designer.

   States may develop their own examinations, have providers of training courses develop examinations, or use standardized examinations developed for purposes of accreditation under TSCA Title II. In addition, States may supplement standardized examinations with questions about State regulations. States may obtain commercially developed standardized examinations, develop standardized examinations independently, or do so in cooperation with other States, or with commercial or non-profit providers on a regional or national basis. EPA recommends the use of standardized, scientifically-validated testing instruments, which may be beneficial in terms of both promoting competency and in fostering accreditation reciprocity between States.

   Each examination shall adequately cover the topics included in the training course for that discipline. Each person who completes a training course, passes the required examination, and fulfills whatever other requirements the State imposes must receive an accreditation certificate in a specific discipline. Whether a State directly issues accreditation certificates, or authorizes training providers to issue accreditation certificates, each certificate issued to an accredited person must contain the following minimum information:

   a. A unique certificate number

   b. Name of accredited person

   c. Discipline of the training course completed.

   d. Dates of the training course.

   e. Date of the examination.

   f. An expiration date of 1 year after the date upon which the person successfully completed the course and examination.

   g. The name, address, and telephone number of the training provider that issued the certificate.

   h. A statement that the person receiving the certificate has completed the requisite training for asbestos accreditation under TSCA Title II.

      States or training providers who reaccredit persons based upon completion of required refresher training must also provide accreditation certificates with all of the above information, except the examination date may be omitted if a State does not require a refresher examination for reaccreditation.

Where a State licenses accredited persons but has authorized training providers to issue accreditation certificates, the State may issue licenses in the form of photo-identification cards. Where this applies, EPA recommends that the State licenses should include all of the same information required for the accreditation certificates. A State may also choose to issue photo-identification cards in addition to the required accreditation certificates.

Accredited persons must have their initial and current accreditation certificates at the location where they are conducting work.

2. The following are the requirements for examination in each discipline:
   a. Worker:
      i. 50 multiple-choice questions
      ii. Passing score: 70 percent correct
   b. Contractor/Supervisor:
      i. 100 multiple-choice questions
      ii. Passing score: 70 percent correct
   c. Inspector:
      i. 50 Multiple-choice questions
      ii. Passing score: 70 percent correct
   d. Management Planner:
      i. 50 Multiple-choice questions
      ii. Passing score: 70 percent correct
   e. Project Designer:
      i. 100 multiple-choice questions
      ii. Passing score: 70 percent correct

D. Continuing Education

For all disciplines, a State's accreditation program shall include annual refresher training as a requirement for reaccreditation as indicated below:

1. Workers: One full day of refresher training.
2. Contractor/Supervisors: One full day of refresher training.
3. Inspectors: One half-day of refresher training.
4. Management Planners: One half-day of inspector refresher training and one half-day of refresher training for management planners.
5. Project Designers: One full day 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 State. After completing the annual refresher course, persons shall have their accreditation extended for an additional year from the date of the refresher course. A State may consider requiring persons to pass reaccreditation examinations at specific intervals (for example, every 3 years).

EPA recommends that States formally establish a 12-month grace period to enable formerly accredited persons with expired certificates to complete refresher training and have their accreditation status reinstated without having to re-take the initial training course.

E. Qualifications

In addition to requiring training and an examination, a State may require candidates for accreditation to meet other qualification and/or experience standards that the State considers appropriate for some or all disciplines. States may choose to consider requiring qualifications similar to the examples outlined below for inspectors, management planners and project designers. States may modify these examples as appropriate. In addition, States may want to include some requirements based on experience in performing a task directly as a part of a job or in an apprenticeship role. They may also wish to consider additional criteria for the approval of training course instructors beyond those prescribed by EPA.

1. Inspectors: Qualifications - possess a high school diploma. States may want to require an Associate's Degree in specific fields (e.g., environmental or physical sciences).
2. Management Planners: Qualifications - Registered architect, engineer, or certified industrial hygienist or related scientific field.
3. Project Designers: Qualifications - registered architect, engineer, or certified industrial hygienist.
4. Asbestos Training Course Instructor: Qualifications - academic credentials and/or field experience in asbestos abatement.

   EPA recommends that States prescribe minimum qualification standards for training instructors employed by training providers.

F. Recordkeeping Requirements for Training Providers

All approved providers of accredited asbestos training courses must comply with the following minimum recordkeeping requirements.

1. Training course materials. A training provider must retain copies of all instructional materials used in the delivery of the classroom training such as student manuals, instructor notebooks and handouts.

2. Instructor qualifications. A training provider must retain copies of all instructors' resumes, and the documents approving each instructor issued by either EPA or a State. Instructors must be approved by either EPA or a State before teaching courses for accreditation purposes. A training provider must notify EPA or the State, as appropriate, in advance whenever it changes course instructors. Records must accurately identify the instructors that taught each particular course for each date that a course is offered.

3. Examinations. A training provider must document that each person who receives an accreditation certificate for an initial training course has achieved a passing score on the examination. These records must clearly indicate the date upon which the exam was administered, the training course and discipline for which the exam was given, the name of the person who proctored the exam, a copy of the exam, and the name and test score of each person taking the exam. The topic and dates of the training course must correspond to those listed on that person's accreditation certificate. States may choose to apply these same requirements to examinations for refresher training courses.

4. Accreditation certificates. The training providers or States, whichever issues the accreditation certificate, shall maintain records that document the names of all persons who have been awarded certificates, their certificate numbers, the disciplines for which accreditation was conferred, training and expiration dates, and the training location. The training provider or State shall maintain the records in a manner that allows verification by telephone of the required information.

5. Verification of certificate information. EPA recommends that training providers of refresher training courses confirm that their students possess valid accreditation before granting course admission. EPA further recommends that training providers offering the initial management planner training course verify that students have met the prerequisite of possessing valid inspector accreditation at the time of course admission.

6. Records retention and access.

   (a) The training provider shall maintain all required records for a minimum of 3 years. The training provider, however, may find it advantageous to retain these records for a longer period of time.

   (b) The training provider must allow reasonable access to all of the records required by the MAP, and to any other records which may be required by States for the approval of asbestos training providers or the accreditation of asbestos training courses, to both EPA and to State Agencies, on request. EPA encourages training providers to make this information equally accessible to the general public.

   (c) If a training provider ceases to conduct training, the training provider shall notify the approving government body (EPA or the State) and give it the opportunity to take possession of that providers asbestos training records.

G. Deaccreditation

1. States must establish criteria and procedures for deaccrediting persons accredited as workers, contractor/supervisors, inspectors, management planners, and project designers. States must follow their own administrative procedures in pursuing deaccreditation actions. At a minimum, the criteria shall include:

(a) Performing work requiring accreditation at a job site without being in physical possession of initial and current accreditation certificates;

(b) Permitting the duplication or use of one's own accreditation certificate by another;

(c) Performing work for which accreditation has not been received; or

(d) Obtaining accreditation from a training provider that does not have approval to offer training for the particular discipline from either EPA or from a State that has a contractor accreditation plan at least as stringent as the EPA MAP.

EPA may directly pursue deaccreditation actions without reliance on State deaccreditation or enforcement authority or actions. In addition to the above-listed situations, the Administrator may suspend or revoke the accreditation of persons who have been subject to a final order imposing a civil penalty or convicted under section 16 of TSCA, 15 U.S.C. 2615 or 2647, for violations of 40 CFR part 763, or section 113 of the Clean Air Act, 42 U.S.C. 7413, for violations of 40 CFR part 61, subpart M.

2. Any person who performs asbestos work requiring accreditation under section 206(a) of TSCA, 15 U.S.C. 2646(a), without such accreditation is in violation of TSCA. The following persons are not accredited for purposes of section 206(a) of TSCA:

(a) Any person who obtains accreditation through fraudulent representation of training or examination documents;

(b) Any person who obtains training documentation through fraudulent means;

(c) Any person who gains admission to and completes refresher training through fraudulent representation of initial or previous refresher training documentation; or

(d) Any person who obtains accreditation through fraudulent representation of accreditation requirements such as education, training, professional registration, or experience.

H. Reciprocity

EPA recommends that each State establish reciprocal arrangements with other States that have established accreditation programs that meet or exceed the requirements of the MAP. Such arrangements might address cooperation in licensing determinations, the review and approval of training programs and/or instructors, candidate testing and exam administration, curriculum development, policy formulation, compliance monitoring, and the exchange of information and data. The benefits to be derived from these arrangements include a potential cost-savings from the reduction of duplicative activity and the attainment of a more professional accredited workforce as States are able to refine and improve the effectiveness of their programs based upon the experience and methods of other States.

I. Electronic Reporting

States that choose to receive electronic documents must include, at a minimum, the requirements of 40 CFR Part 3 - (Electronic reporting) in their programs.

II. EPA Approval Process for State Accreditation Programs

A. States may seek approval for a single discipline or all disciplines as specified in the MAP. For example, a State that currently only requires worker accreditation may receive EPA approval for that discipline alone. EPA encourages States that currently do not have accreditation requirements for all disciplines required under section 206(b)(2) of TSCA, 15 U.S.C. 2646(b)(2), to seek EPA approval for those disciplines the State does accredit. As States establish accreditation requirements for the remaining disciplines, the requested information outlined below should be submitted to EPA as soon as possible. Any State that had an accreditation program approved by EPA under an earlier version of the MAP may follow the same procedures to obtain EPA approval of their accreditation program under this MAP.

B. Partial approval of a State Program for the accreditation of one or more disciplines does not mean that the State is in full compliance with TSCA where the deadline for that State to have adopted a State Plan no less stringent than the MAP has already passed. State Programs which are at least as stringent as the MAP for one or more of the accredited disciplines may, however, accredit persons in those disciplines only.

C. States seeking EPA approval or reapproval of accreditation programs shall submit the following information to the Regional Asbestos Coordinator at their EPA Regional office:

1. A copy of the legislation establishing or upgrading the State's accreditation program (if applicable).

2. A copy of the State's accreditation regulations or revised regulations.

3. A letter to the Regional Asbestos Coordinator that clearly indicates how the State meets the program requirements of this MAP. Addresses for each of the Regional Asbestos Coordinators are shown below:

   EPA, Region 1, Asbestos Coordinator, 5 Post Office Square - Suite 100 (05-4), Boston, MA 02109-3912, (617) 918-1563.

   EPA, Region II, (MS-500), Asbestos Coordinator, 2890 Woodbridge Ave., Edison, NJ 08837-3679, (908) 321-6671.

   EPA, Region III, (3AT-33), Asbestos Coordinator, 841 Chestnut Bldg., Philadelphia, PA 19107, (215) 597-3160.

   EPA, Region IV, Asbestos Coordinator, 345 Courtland St., N.E., Atlanta, GA 30365, (404) 347-5014.

   EPA, Region V, (SP-14J), Asbestos Coordinator, 77 W. Jackson Blvd., Chicago, IL 60604-3590, (312) 886-6003.

   EPA, Region VI, (ECD), Asbestos Coordinator, 1201 Elm Street, Suite 500, Dallas, TX 75270, (214) 655-2760.

   EPA, Region VII, (WWPD/TOPE), Asbestos Coordinator, U.S. Environmental Protection Agency, 11201 Renner Boulevard, Lenexa, Kansas 66219. (800) 223-0425 or (913) 551-7122.

EPA, Region VIII, (8AT-TS), Asbestos Coordinator, 1 Denver Place, Suite 500 999 - 18th St., Denver, CO 80202-2405, (303) 293-1442.

EPA, Region IX, Asbestos NESHAPs Contact, Air Division (A-5), 75 Hawthorne Street, San Francisco, CA 94105, (415) 972-3989.

EPA, Region X, (AT-083), Asbestos Coordinator, 1200 Sixth Ave., Seattle, WA 98101, (206) 553-4762.

EPA maintains a listing of all those States that have applied for and received EPA approval for having accreditation requirements that are at least as stringent as the MAP for one or more disciplines. Any training courses approved by an EPA-approved State Program are considered to be EPA-approved for purposes of accreditation.

III. Approval of Training Courses

Individuals or groups wishing to sponsor training courses for disciplines required to be accredited under section 206(b)(1)(A) of TSCA, 15 U.S.C. 2646(b)(1)(A), may apply for approval from States that have accreditation program requirements that are at least as stringent as this MAP. For a course to receive approval, it must meet the requirements for the course as outlined in this MAP, and any other requirements imposed by the State from which approval is being sought. Courses that have been approved by a State with an accreditation program at least as stringent as this MAP are approved under section 206(a) of TSCA, 15 U.S.C. 2646(a), for that particular State, and also for any other State that does not have an accreditation program as stringent as this MAP.

A. Initial Training Course Approval

A training provider must submit the following minimum information to a State as part of its application for the approval of each training course:

1. The course provider's name, address, and telephone number.
2. A list of any other States that currently approve the training course.
3. The course curriculum.
4. A letter from the provider of the training course that clearly indicates how the course meets the MAP requirements for:
    a. Length of training in days.
    b. Amount and type of hands-on training.
    c. Examination (length, format, and passing score).
    d. Topics covered in the course.
5. A copy of all course materials (student manuals, instructor notebooks, handouts, etc.).
6. A detailed statement about the development of the examination used in the course.

7. Names and qualifications of all course instructors. Instructors must have academic and/or field experience in asbestos abatement.

8. A description of and an example of the numbered certificates issued to students who attend the course and pass the examination.

B. Refresher Training Course Approval

The following minimum information is required for approval of refresher training courses by States:

1. The length of training in half-days or days.

2. The topics covered in the course.

3. A copy of all course materials (student manuals, instructor notebooks, handouts, etc.).

4. The names and qualifications of all course instructors. Instructors must have academic and/or field experience in asbestos abatement.

5. A description of and an example of the numbered certificates issued to students who complete the refresher course and pass the examination, if required.

C. Withdrawal of Training Course Approval

States must establish criteria and procedures for suspending or withdrawing approval from accredited training programs. States should follow their own administrative procedures in pursuing actions for suspension or withdrawal of approval of training programs. At a minimum, the criteria shall include:

(1) Misrepresentation of the extent of a training course's approval by a State or EPA;

(2) Failure to submit required information or notifications in a timely manner;

(3) Failure to maintain requisite records;

(4) Falsification of accreditation records, instructor qualifications, or other accreditation information; or

(5) Failure to adhere to the training standards and requirements of the EPA MAP or State Accreditation Program, as appropriate.

In addition to the criteria listed above, EPA may also suspend or withdraw a training course's approval where an approved training course instructor, or other person with supervisory authority over the delivery of training has been found in violation of other asbestos regulations administered by EPA. An administrative or judicial finding of violation, or execution of a consent agreement and order under 40 CFR 22.18, constitutes evidence of a failure to comply with relevant statutes or regulations. States may wish to adopt this criterion modified to include their own asbestos statutes or regulations. EPA may also suspend or withdraw approval of training programs where a training provider has submitted false information as a part of the self-certification required under Unit V.B. of the revised MAP.

Training course providers shall permit representatives of EPA or the State which approved their training courses to attend, evaluate, and monitor any training course without charge. EPA or State compliance inspection staff are not required to give advance notice of their inspections. EPA may suspend or withdraw State or EPA approval of a training course based upon the criteria specified in this Unit III.C.

IV. EPA Procedures for Suspension or Revocation of Accreditation or Training Course Approval.

A. If the Administrator decides to suspend or revoke the accreditation of any person or suspend or withdraw the approval of a training course, the Administrator will notify the affected entity of the following:

1. The grounds upon which the suspension, revocation, or withdrawal is based.
2. The time period during which the suspension, revocation, or withdrawal is effective, whether permanent or otherwise.
3. The conditions, if any, under which the affected entity may receive accreditation or approval in the future.
4. Any additional conditions which the Administrator may impose.
5. The opportunity to request a hearing prior to final Agency action to suspend or revoke accreditation or suspend or withdraw approval.

B. If a hearing is requested by the accredited person or training course provider pursuant to the preceding paragraph, the Administrator will:

1. Notify the affected entity of those assertions of law and fact upon which the action to suspend, revoke, or withdraw is based.
2. Provide the affected entity an opportunity to offer written statements of facts, explanations, comments, and arguments relevant to the proposed action.
3. Provide the affected entity such other procedural opportunities as the Administrator may deem appropriate to ensure a fair and impartial hearing.
4. Appoint an EPA attorney as Presiding Officer to conduct the hearing. No person shall serve as Presiding Officer if he or she has had any prior connection with the specific case.

C. The Presiding Officer appointed pursuant to the preceding paragraph shall:

1. Conduct a fair, orderly, and impartial hearing, without unnecessary delay.
2. Consider all relevant evidence, explanation, comment, and argument submitted pursuant to the preceding paragraph.
3. Promptly notify the affected entity of his or her decision and order. Such an order is a final Agency action.

D. If the Administrator determines that the public health, interest, or welfare warrants immediate action to suspend the accreditation of any person or the approval of any training course provider, the Administrator will:

1. Notify the affected entity of the grounds upon which the emergency suspension is based;
2. Notify the affected entity of the time period during which the emergency suspension is effective.
3. Notify the affected entity of the Administrator's intent to suspend or revoke accreditation or suspend or withdraw training course approval, as appropriate, in accordance with Unit IV.A. above. If such suspension, revocation, or withdrawal notice has not previously been issued, it will be issued at the same time the emergency suspension notice is issued.

E. Any notice, decision, or order issued by the Administrator under this section, and any documents filed by an accredited person or approved training course provider in a hearing under this section, shall be available to the public except as otherwise provided by section 14 of TSCA or by 40 CFR part 2. Any such hearing at which oral testimony is presented shall be open to the public, except that the Presiding Officer may exclude the public to the extent necessary to allow presentation of information which may be entitled to confidential treatment under section 14 of TSCA or 40 CFR part 2.

V. Implementation Schedule

The various requirements of this MAP become effective in accordance with the following schedules:

A. Requirements applicable to State Programs

1. Each State shall adopt an accreditation plan that is at least as stringent as this MAP within 180 days after the commencement of the first regular session of the legislature of the State that is convened on or after April 4, 1994.
2. If a State has adopted an accreditation plan at least as stringent as this MAP as of April 4, 1994, the State may continue to:
    a. Conduct TSCA training pursuant to this MAP.
    b. Approve training course providers to conduct training and to issue accreditation that satisfies the requirements for TSCA accreditation under this MAP.
    c. Issue accreditation that satisfies the requirements for TSCA accreditation under this MAP.
3. A State that had complied with an earlier version of the MAP, but has not adopted an accreditation plan at least as stringent as this MAP by April 4, 1994, may:
    a. Conduct TSCA training which remains in compliance with the requirements of Unit V.B. of this MAP. After such training has been self-certified in accordance with Unit V.B. of this MAP, the State may issue accreditation that satisfies the requirement for TSCA accreditation under this MAP.
    b. Sustain its approval for any training course providers to conduct training and issue TSCA accreditation that the State had approved before April 4, 1994, and that remain in compliance with Unit V.B. of this MAP.
    c. Issue accreditation pursuant to an earlier version of the MAP that provisionally satisfies the requirement for TSCA accreditation until October 4, 1994.

Such a State may not approve new TSCA training course providers to conduct training or to issue TSCA accreditation that satisfies the requirements of this MAP until the State adopts an accreditation plan that is at least as stringent as this MAP.

4. A State that had complied with an earlier version of the MAP, but fails to adopt a plan as stringent as this MAP by the deadline established in Unit V.A.1., is subject to the following after that deadline date:

   a. The State loses any status it may have held as an EPA-approved State for accreditation purposes under section 206 of TSCA, 15 U.S.C. 2646.

   b. All training course providers approved by the State lose State approval to conduct training and issue accreditation that satisfies the requirements for TSCA accreditation under this MAP.

   c. The State may not:

      i. Conduct training for accreditation purposes under section 206 of TSCA, 15 U.S.C. 2646.

      ii. Approve training course providers to conduct training or issue accreditation that satisfies the requirements for TSCA accreditation; or

      iii. Issue accreditation that satisfies the requirement for TSCA accreditation.

      EPA will extend EPA-approval to any training course provider that loses State approval because the State does not comply with the deadline, so long as the provider is in compliance with Unit V.B. of this MAP, and the provider is approved by a State that had complied with an earlier version of the MAP as of the day before the State loses its EPA approval.

5. A State that does not have an accreditation program that satisfies the requirements for TSCA accreditation under either an earlier version of the MAP or this MAP, may not:

   a. Conduct training for accreditation purposes under section 206 of TSCA, 15 U.S.C. 2646;

   b. Approve training course providers to conduct training or issue accreditation that satisfies the requirements for TSCA accreditation; or

   c. Issue accreditation that satisfies the requirement for TSCA accreditation.

B. Requirements applicable to Training Courses and Providers

As of October 4, 1994, an approved training provider must certify to EPA and to any State that has approved the provider for TSCA accreditation, that each of the provider's training courses complies with the requirements of this MAP. The written submission must document in specific detail the changes made to each training course in order to comply with the requirements of this MAP and clearly state that the provider is also in compliance with all other requirements of this MAP, including the new recordkeeping and certificate provisions. Each submission must include the following statement signed by an authorized representative of the training provider: “Under civil and criminal penalties of law for the making or submission of false or fraudulent statements or representations (18 U.S.C. 1001 and 15 U.S.C. 2615), I certify that the training described in this submission complies with all applicable requirements of Title II of TSCA, 40 CFR part 763, Appendix C to subpart E, as

revised, and any other applicable Federal, state, or local requirements." A consolidated self-certification submission from each training provider that addresses all of its approved training courses is permissible and encouraged.

The self-certification must be sent via registered mail, to EPA Headquarters at the following address: Attn. Self-Certification Program, Field Programs Branch, Chemical Management Division (7404), Office of Pollution Prevention and Toxics, Environmental Protection Agency, 1200 Pennsylvania Ave., NW., Washington, DC 20460. A duplicate copy of the complete submission must also be sent to any States from which approval had been obtained.

The timely receipt of a complete self-certification by EPA and all approving States shall have the effect of extending approval under this MAP to the training courses offered by the submitting provider. If a self-certification is not received by the approving government bodies on or before the due date, the affected training course is not approved under this MAP. Such training providers must then reapply for approval of these training courses pursuant to the procedures outlined in Unit III.

C. Requirements applicable to Accredited Persons.

Persons accredited by a State with an accreditation program no less stringent than an earlier version of the MAP or by an EPA-approved training provider as of April 3, 1994, are accredited in accordance with the requirements of this MAP, and are not required to retake initial training. They must continue to comply with the requirements for annual refresher training in Unit I.D. of the revised MAP.

D. Requirements applicable to Non-Accredited Persons.

In order to perform work requiring accreditation under TSCA Title II, persons who are not accredited by a State with an accreditation program no less stringent than an earlier version of the MAP or by an EPA-approved training provider as of April 3, 1994, must comply with the upgraded training requirements of this MAP by no later than October 4, 1994. Non-accredited persons may obtain initial accreditation on a provisional basis by successfully completing any of the training programs approved under an earlier version of the MAP, and thereby perform work during the first 6 months after this MAP takes effect. However, by October 4, 1994, these persons must have successfully completed an upgraded training program that fully complies with the requirements of this MAP in order to continue to perform work requiring accreditation under section 206 of TSCA, 15 U.S.C. 2646.

[59 FR 5251, Feb. 3, 1994, as amended at 60 FR 31922, June 19, 1995; 70 FR 59889, Oct. 13, 2005; 75 FR 69353, Nov. 12, 2010; 76 FR 49674, Aug. 11, 2011; 78 FR 37978, June 25, 2013; 84 FR 34070, July 17, 2019; 84 FR 44232, Aug. 23, 2019]

Appendix D to Subpart E of Part 763 - Transport and Disposal of Asbestos Waste

For the purposes of this appendix, transport is defined as all activities from receipt of the containerized asbestos waste at the generation site until it has been unloaded at the disposal site. Current EPA regulations state that there must be no visible emissions to the outside air during waste transport. However, recognizing the potential hazards and subsequent liabilities associated with exposure, the following additional precautions are recommended.

Recordkeeping. Before accepting wastes, a transporter should determine if the waste is properly wetted and containerized. The transporter should then require a chain-of-custody form signed by the generator. A chain-of-custody form may include the name and address of the generator, the name and address of the pickup site, the estimated quantity of asbestos waste, types of containers used, and the destination of the

waste. The chain-of-custody form should then be signed over to a disposal site operator to transfer responsibility for the asbestos waste. A copy of the form signed by the disposal site operator should be maintained by the transporter as evidence of receipt at the disposal site.

Waste handling. A transporter should ensure that the asbestos waste is properly contained in leak-tight containers with appropriate labels, and that the outside surfaces of the containers are not contaminated with asbestos debris adhering to the containers. If there is reason to believe that the condition of the asbestos waste may allow significant fiber release, the transporter should not accept the waste. Improper containerization of wastes is a violation of the NESHAPs regulation and should be reported to the appropriate EPA Regional Asbestos NESHAPs contact below:

Region I

Asbestos NESHAPs Contact, Enforcement and Compliance Assurance Division, USEPA, Region I, 5 Post Office Square - Suite 100 (05-4), Boston, MA 02109-3912, (617) 918-1739.

Region II

Asbestos NESHAPs Contact, Air & Waste Management Division, USEPA, Region II, 26 Federal Plaza, New York, NY 10007, (212) 264-6770.

Region III

Asbestos NESHAPs Contact, Air Management Division, USEPA, Region III, 841 Chestnut Street, Philadelphia, PA 19107, (215) 597-9325.

Region IV

Asbestos NESHAPs Contact, Air, Pesticide & Toxic Management, USEPA, Region IV, 345 Courtland Street, NE., Atlanta, GA 30365, (404) 347-4298.

Region V

Asbestos NESHAPs Contact, Air Management Division, USEPA, Region V, 77 West Jackson Boulevard, Chicago, IL 60604, (312) 353-6793.

Region VI

Asbestos NESHAP Contact, Enforcement and Compliance Assurance Division, USEPA Region VI, 1201 Elm Street, Suite 500, Mail Code 6ECD, Dallas, Texas 75270-2102, (214) 655-2760.

Region VII

Asbestos NESHAPs Contact, Air and Waste Management Division, U.S. Environmental Protection Agency, Region 7, 11201 Renner Boulevard, Lenexa, Kansas 66219. (800) 223-0425 or (913) 551-7122.

Region VIII

Asbestos NESHAPs Contact, Air & Waste Management Division, USEPA, Region VIII, 999 18th Street, Suite 500, Denver, CO 80202, (303) 293-1814.

Region IX

Asbestos NESHAPs Contact, Air Division, USEPA, Region IX, 75 Hawthorne Street, San Francisco, CA 94105, (415) 972-3989.

Region X

Asbestos NESHAPs Contact, Air & Toxics Management Division, USEPA, Region X, 1200 Sixth Avenue, Seattle, WA 98101, (206) 442-2724.

Once the transporter is satisfied with the condition of the asbestos waste and agrees to handle it, the containers should be loaded into the transport vehicle in a careful manner to prevent breaking of the containers. Similarly, at the disposal site, the asbestos waste containers should be transferred carefully to avoid fiber release.

Waste transport. Although there are no regulatory specifications regarding the transport vehicle, it is recommended that vehicles used for transport of containerized asbestos waste have an enclosed carrying compartment or utilize a canvas covering sufficient to contain the transported waste, prevent damage to containers, and prevent fiber release. Transport of large quantities of asbestos waste is commonly conducted in a 20-cubic-yard "roll off" box, which should also be covered. Vehicles that use compactors to reduce waste volume should not be used because these will cause the waste containers to rupture. Vacuum trucks used to transport waste slurry must be inspected to ensure that water is not leaking from the truck.

Disposal involves the isolation of asbestos waste material in order to prevent fiber release to air or water. Landfilling is recommended as an environmentally sound isolation method because asbestos fibers are virtually immobile in soil. Other disposal techniques such as incineration or chemical treatment are not feasible due to the unique properties of asbestos. EPA has established asbestos disposal requirements for active and inactive disposal sites under NESHAPs (40 CFR Part 61, subpart M) and specifies general requirements for solid waste disposal under RCRA (40 CFR Part 257). Advance EPA notification of the intended disposal site is required by NESHAPs.

Selecting a disposal facility. An acceptable disposal facility for asbestos wastes must adhere to EPA's requirements of no visible emissions to the air during disposal, or minimizing emissions by covering the waste within 24 hours. The minimum required cover is 6 inches of nonasbestos material, normally soil, or a dust-suppressing chemical. In addition to these Federal requirements, many state or local government agencies require more stringent handling procedures. These agencies usually supply a list of "approved" or licensed asbestos disposal sites upon request. Solid waste control agencies are listed in local

telephone directories under state, county, or city headings. A list of state solid waste agencies may be obtained by calling the RCRA hotline: 1-800-424-9346 (382-3000 in Washington, DC). Some landfill owners or operators place special requirements on asbestos waste, such as placing all bagged waste into 55-gallon metal drums. Therefore, asbestos removal contractors should contact the intended landfill before arriving with the waste.

Receiving asbestos waste. A landfill approved for receipt of asbestos waste should require notification by the waste hauler that the load contains asbestos. The landfill operator should inspect the loads to verify that asbestos waste is properly contained in leak-tight containers and labeled appropriately. The appropriate EPA Regional Asbestos NESHAPs Contact should be notified if the landfill operator believes that the asbestos waste is in a condition that may cause significant fiber release during disposal. In situations when the wastes are not properly containerized, the landfill operator should thoroughly soak the asbestos with a water spray prior to unloading, rinse out the truck, and immediately cover the wastes with nonasbestos material prior to compacting the waste in the landfill.

Waste deposition and covering. Recognizing the health dangers associated with asbestos exposure, the following procedures are recommended to augment current federal requirements:

• Designate a separate area for asbestos waste disposal. Provide a record for future landowners that asbestos waste has been buried there and that it would be hazardous to attempt to excavate that area. (Future regulations may require property deeds to identify the location of any asbestos wastes and warn against excavation.)

• Prepare a separate trench to receive asbestos wastes. The size of the trench will depend upon the quantity and frequency of asbestos waste delivered to the disposal site. The trenching technique allows application of soil cover without disturbing the asbestos waste containers. The trench should be ramped to allow the transport vehicle to back into it, and the trench should be as narrow as possible to reduce the amount of cover required. If possible, the trench should be aligned perpendicular to prevailing winds.

• Place the asbestos waste containers into the trench carefully to avoid breaking them. Be particularly careful with plastic bags because when they break under pressure asbestos particles can be emitted.

• Completely cover the containerized waste within 24 hours with a minimum of 6 inches of nonasbestos material. Improperly containerized waste is a violation of the NESHAPs and EPA should be notified.

However, if improperly containerized waste is received at the disposal site, it should be covered immediately after unloading. Only after the wastes, including properly containerized wastes, are completely covered, can the wastes be compacted or other heavy equipment run over it. During compacting, avoid exposing wastes to the air or tracking asbestos material away from the trench.

• For final closure of an area containing asbestos waste, cover with at least an additional 30 inches of compacted nonasbestos material to provide a 36-inch final cover. To control erosion of the final cover, it should be properly graded and vegetated. In areas of the United States where excessive soil erosion may occur or the frost line exceeds 3 feet, additional final cover is recommended. In desert areas where vegetation would be difficult to maintain, 3-6 inches of well graded crushed rock is recommended for placement on top of the final cover.

Controlling public access. Under the current NESHAPs regulation, EPA does not require that a landfill used for asbestos disposal use warning signs or fencing if it meets the requirement to cover asbestos wastes. However, under RCRA, EPA requires that access be controlled to prevent exposure of the public to potential health and safety hazards at the disposal site. Therefore, for liability protection of operators of landfills that handle asbestos, fencing and warning signs are recommended to control public access

when natural barriers do not exist. Access to a landfill should be limited to one or two entrances with gates that can be locked when left unattended. Fencing should be installed around the perimeter of the disposal site in a manner adequate to deter access by the general public. Chain-link fencing, 6-ft high and topped with a barbed wire guard, should be used. More specific fencing requirements may be specified by local regulations. Warning signs should be displayed at all entrances and at intervals of 330 feet or less along the property line of the landfill or perimeter of the sections where asbestos waste is deposited. The sign should read as follows:

ASBESTOS WASTE DISPOSAL SITE

BREATHING ASBESTOS DUST MAY CAUSE LUNG DISEASE AND CANCER

Recordkeeping. For protection from liability, and considering possible future requirements for notification on disposal site deeds, a landfill owner should maintain documentation of the specific location and quantity of the buried asbestos wastes. In addition, the estimated depth of the waste below the surface should be recorded whenever a landfill section is closed. As mentioned previously, such information should be recorded in the land deed or other record along with a notice warning against excavation of the area.

[52 FR 41897, Oct. 30, 1987, as amended at 62 FR 1834, Jan. 14, 1997; 75 FR 69353, Nov. 12, 2010; 76 FR 49674, Aug. 11, 2011; 78 FR 37978, June 25, 2013; 84 FR 34070, July 17, 2019; 84 FR 44233, Aug. 23, 2019]

Appendix E to Subpart E of Part 763 - Interim Method of the Determination of Asbestos in Bulk Insulation Samples

Section 1. Polarized Light Microscopy

1.1 Principle and Applicability

Bulk samples of building materials taken for asbestos identification are first examined for homogeneity and preliminary fiber identification at low magnification. Positive identification of suspect fibers is made by analysis of subsamples with the polarized light microscope.

The principles of optical mineralogy are well established.[1] [2] A light microscope equipped with two polarizing filters is used to observe specific optical characteristics of a sample. The use of plane polarized light allows the determination of refractive indices along specific crystallographic axes. Morphology and color are also observed. A retardation plate is placed in the polarized light path for determination of the sign of elongation using orthoscopic illumination. Orientation of the two filters such that their vibration planes are perpendicular (crossed polars) allows observation of the birefringence and extinction characteristics of anisotropic particles.

Quantitative analysis involves the use of point counting. Point counting is a standard technique in petrography for determining the relative areas occupied by separate minerals in thin sections of rock. Background information on the use of point counting[2] and the interpretation of point count data[3] is available.

This method is applicable to all bulk samples of friable insulation materials submitted for identification and quantitation of asbestos components.

1.2 Range

The point counting method may be used for analysis of samples containing from 0 to 100 percent asbestos. The upper detection limit is 100 percent. The lower detection limit is less than 1 percent.

1.3 Interferences

Fibrous organic and inorganic constituents of bulk samples may interfere with the identification and quantitation of the asbestos mineral content. Spray-on binder materials may coat fibers and affect color or obscure optical characteristics to the extent of masking fiber identity. Fine particles of other materials may also adhere to fibers to an extent sufficient to cause confusion in identification. Procedures that may be used for the removal of interferences are presented in Section 1.7.2.2.

1.4 Precision and Accuracy

Adequate data for measuring the accuracy and precision of the method for samples with various matrices are not currently available. Data obtained for samples containing a single asbestos type in a simple matrix are available in the EPA report *Bulk Sample Analysis for Asbestos Content: Evaluation of the Tentative Method.* [4]

1.5 Apparatus

1.5.1 Sample Analysis

A low-power binocular microscope, preferably stereoscopic, is used to examine the bulk insulation sample as received.

• *Microscope:* binocular, 10-45X (approximate).

• *Light Source:* incandescent or fluorescent.

• *Forceps, Dissecting Needles, and Probes*

• *Glassine Paper or Clean Glass Plate*

Compound microscope requirements: A polarized light microscope complete with polarizer, analyzer, port for wave retardation plate, 360° graduated rotating stage, substage condenser, lamp, and lamp iris.

• *Polarized Light Microscope:* described above.

• *Objective Lenses:* 10X, 20X, and 40X or near equivalent.

• *Dispersion Staining Objective Lens* (optional)

• *Ocular Lens:* 10X minimum.

• *Eyepiece Reticle:* cross hair or 25 point Chalkley Point Array.

• *Compensator Plate:* 550 millimicron retardation.

1.5.2 Sample Preparation

Sample preparation apparatus requirements will depend upon the type of insulation sample under consideration. Various physical and/or chemical means may be employed for an adequate sample assessment.

• *Ventilated Hood* or negative pressure glove box.

• *Microscope Slides*

• *Coverslips*

• *Mortar and Pestle:* agate or porcelain. (optional)

• *Wylie Mill* (optional)

• *Beakers and Assorted Glassware* (optional)

• *Certrifuge* (optional)

• *Filtration apparatus* (optional)

• *Low temperature asher* (optional)

1.6 Reagents

1.6.1 Sample Preparation

• *Distilled Water (optional)*

• *Dilute CH_3COOH:* ACS reagent grade (optional)

• *Dilute HCl:* ACS reagent grade (optional)

• *Sodium metaphosphate* $(NaPO_3)_6$ (optional)

1.6.2 Analytical Reagents

Refractive Index Liquids: 1.490-1.570, 1.590-1.720 in increments of 0.002 or 0.004.

• *Refractive Index Liquids for Dispersion Staining:* high-dispersion series, 1.550, 1.605, 1.630 (optional).

• *UICC Asbestos Reference Sample Set:* Available from: UICC MRC Pneumoconiosis Unit, Llandough Hospital, Penarth, Glamorgan CF6 1XW, UK, and commercial distributors.

• *Tremolite-asbestos* (source to be determined)

• *Actinolite-asbestos* (source to be determined)

1.7 Procedures

Note: Exposure to airborne asbestos fibers is a health hazard. Bulk samples submitted for analysis are usually friable and may release fibers during handling or matrix reduction steps. All sample and slide preparations should be carried out in a ventilated hood or glove box with continuous airflow (negative pressure). Handling of samples without these precautions may result in exposure of the analyst and contamination of samples by airborne fibers.

1.7.1 Sampling

Samples for analysis of asbestos content shall be taken in the manner prescribed in Reference 5 and information on design of sampling and analysis programs may be found in Reference 6. If there are any questions about the representative nature of the sample, another sample should be requested before proceeding with the analysis.

1.7.2 Analysis

1.7.2.1 Gross Examination

Bulk samples of building materials taken for the identification and quantitation of asbestos are first examined for homogeneity at low magnification with the aid of a stereomicroscope. The core sample may be examined in its container or carefully removed from the container onto a glassine transfer paper or clean glass plate. If possible, note is made of the top and bottom orientation. When discrete strata are identified, each is treated as a separate material so that fibers are first identified and quantified in that layer only, and then the results for each layer are combined to yield an estimate of asbestos content for the whole sample.

1.7.2.2 Sample Preparation

Bulk materials submitted for asbestos analysis involve a wide variety of matrix materials. Representative subsamples may not be readily obtainable by simple means in heterogeneous materials, and various steps may be required to alleviate the difficulties encountered. In most cases, however, the best

preparation is made by using forceps to sample at several places from the bulk material. Forcep samples are immersed in a refractive index liquid on a microscope slide, teased apart, covered with a cover glass, and observed with the polarized light microscope.

Alternatively, attempts may be made to homogenize the sample or eliminate interferences before further characterization. The selection of appropriate procedures is dependent upon the samples encountered and personal preference. The following are presented as possible sample preparation steps.

A mortar and pestle can sometimes be used in the size reduction of soft or loosely bound materials though this may cause matting of some samples. Such samples may be reduced in a Wylie mill. Apparatus should be clean and extreme care exercised to avoid cross-contamination of samples. Periodic checks of the particle sizes should be made during the grinding operation so as to preserve any fiber bundles present in an identifiable form. These procedures are not recommended for samples that contain amphibole minerals or vermiculite. Grinding of amphiboles may result in the separation of fiber bundles or the production of cleavage fragments with aspect ratios greater than 3:1. Grinding of vermiculite may also produce fragments with aspect ratios greater than 3:1.

Acid treatment may occasionally be required to eliminate interferences. Calcium carbonate, gypsum, and bassanite (plaster) are frequently present in sprayed or trowelled insulations. These materials may be removed by treatment with warm dilute acetic acid. Warm dilute hydrochloric acid may also be used to remove the above materials. If acid treatment is required, wash the sample at least twice with distilled water, being careful not to lose the particulates during decanting steps. Centrifugation or filtration of the suspension will prevent significant fiber loss. The pore size of the filter should be 0.45 micron or less. Caution: prolonged acid contact with the sample may alter the optical characteristics of chrysotile fibers and should be avoided.

Coatings and binding materials adhering to fiber surfaces may also be removed by treatment with sodium metaphosphate.[7] Add 10 mL of 10g/L sodium metaphosphate solution to a small (0.1 to 0.5 mL) sample of bulk material in a 15-mL glass centrifuge tube. For approximately 15 seconds each, stir the mixture on a vortex mixer, place in an ultrasonic bath and then shake by hand. Repeat the series. Collect the dispersed solids by centrifugation at 1000 rpm for 5 minutes. Wash the sample three times by suspending in 10 mL distilled water and recentrifuging. After washing, resuspend the pellet in 5 mL distilled water, place a drop of the suspension on a microscope slide, and dry the slide at 110 °C.

In samples with a large portion of cellulosic or other organic fibers, it may be useful to ash part of the sample and view the residue. Ashing should be performed in a low temperature asher. Ashing may also be performed in a muffle furnace at temperatures of 500 °C or lower. Temperatures of 550 °C or higher will cause dehydroxylation of the asbestos minerals, resulting in changes of the refractive index and other key parameters. If a muffle furnace is to be used, the furnace thermostat should be checked and calibrated to ensure that samples will not be heated at temperatures greater than 550 °C.

Ashing and acid treatment of samples should not be used as standard procedures. In order to monitor possible changes in fiber characteristics, the material should be viewed microscopically before and after any sample preparation procedure. Use of these procedures on samples to be used for quantitation requires a correction for percent weight loss.

1.7.2.3 Fiber Identification

Positive identification of asbestos requires the determination of the following optical properties.

- Morphology
- Color and pleochroism
- Refractive indices
- Birefringence
- Extinction characteristics
- Sign of elongation

Table 1-1 lists the above properties for commercial asbestos fibers. Figure 1-1 presents a flow diagram of the examination procedure. Natural variations in the conditions under which deposits of asbestiform minerals are formed will occasionally produce exceptions to the published values and differences from the UICC standards. The sign of elongation is determined by use of the compensator plate and crossed polars. Refractive indices may be determined by the Becke line test. Alternatively, dispersion staining may be used. Inexperienced operators may find that the dispersion staining technique is more easily learned, and should consult Reference 9 for guidance. Central stop dispersion staining colors are presented in Table 1-2. Available high-dispersion (HD) liquids should be used.

Table 1-1 - Optical Properties of Asbestoc Fibers

Mineral	Morphology, color[a]	Refractive indices[b]		Birefringence	Extinction	Sign of elonation
		α	γ			
Chrysotile (asbestiform serpentine)	Wavy fibers. Fiber bundles have splayed ends and "kinks". Aspect ratio typically >10:1. Colorless[3], nonpleochroic	1.493-1.560	1.517-1.562[f] (normally 1.556)	.008	| to fiber length	+ (length slow)
Amosite (asbestiform grunerite)	Straight, rigid fibers. Aspect ratio typically >10:1. Colorless to brown, nonpleochroic or weakly so. Opaque inclusions may be present	1.635-1.696	1.655-1.729[f] (normally 1.696-1.710	.020-.033	| to fiber length	+ (length slow)
Crocidolite (asbestiform Riebeckite)	Straight, rigid fibers. Thick fibers and bundles common, blue to purple-blue in color. Pleochroic. Birefringence is generally masked by blue color	1.654-1.701	1.668-1.717[3e] (normally close to 1.700)	.014-.016	| to fiber length	− (length fast)
Anthophyllite-	Straight fibers and	1.596-1.652	1.615-1.676[f]	.019-.024	| to fiber	+

Mineral	Morphology, color[a]	Refractive indices[b]		Birefringence	Extinction	Sign of elonation
		α	γ			
asbestos	acicular cleavage fragments.[d] Some composite fibers. Aspect ratio <10:1. Colorless to light brown				length	(length slow)
Tremolite-actinolite-asbestos	Normally present as acicular or prismatic cleavage fragments.[d] Single crystals predominate, aspect ratio <10:1. Colorless to pale green	1.599-1.668	1.622-1.688[f]	.023-.020	Oblique extinction, 10-20° for fragments. Composite fibers show | extinction	+ (length slow)

[a] From reference 5; colors cited are seen by observation with plane polarized light.

[b] From references 5 and 8.

[c] Fibers subjected to heating may be brownish.

[d] Fibers defined as having aspect ratio >3:1.

[e] to fiber length.

[f] |To fiber length.

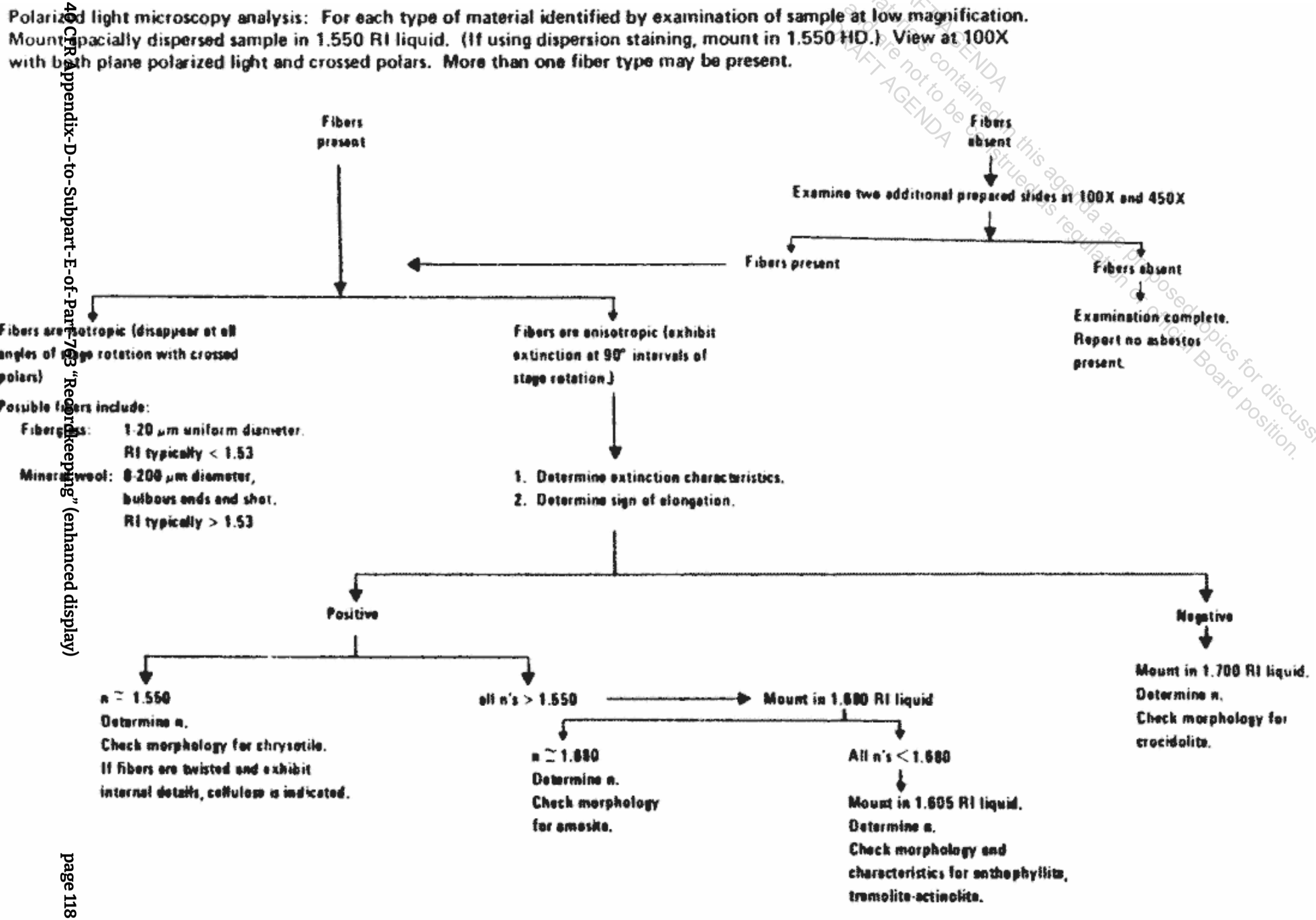


Figure 1-1. Flow chart for analysis of bulk samples by polarized light microscopy.

40 CFR Appendix-D-to-Subpart-E-of-Part-763
"Recordkeeping"

Table 1-2 - Central Stop Dispersion Staining Colors [a]

Mineral	RI Liquid	η	η|
Chrysotile	1.550^{HD}	Blue	Blue-magenta
Amosite	1.680	Blue-magenta to pale blue	Golden-yellow
	1.550^{HD}	Yellow to white	Yellow to white
Crocidolite[b]	1.700	Red magenta	Blue-magenta
	1.550^{HD}	Yellow to white	Yellow to white
Anthophyllite	1.605^{HD}	Blue	Gold to gold-magenta
Tremolite	1.605^{HD} [c]	Pale blue	Gold
Actinolite	1.605^{HD}	Gold-magenta to blue	Gold
	1.630^{HD} [c]	Magenta	Golden-yellow

[a] From reference 9.

[b] Blue absorption color.

[c] Oblique extinction view.

1.7.2.4 Quantitation of Asbestos Content

Asbestos quantitation is performed by a point-counting procedure or an equivalent estimation method. An ocular reticle (cross-hair or point array) is used to visually superimpose a point or points on the microscope field of view. Record the number of points positioned directly above each kind of particle or fiber of interest. Score only points directly over asbestos fibers or nonasbestos matrix material. Do not score empty points for the closest particle. If an asbestos fiber and a matrix particle overlap so that a point is superimposed on their visual intersection, a point is scored for both categories. Point counting provides a determination of the area percent asbestos. Reliable conversion of area percent to percent of dry weight is not currently feasible unless the specific gravities and relative volumes of the materials are known.

For the purpose of this method, "asbestos fibers" are defined as having an aspect ratio greater than 3:1 and being positively identified as one of the minerals in Table 1-1.

A total of 400 points superimposed on either asbestos fibers or nonasbestos matrix material must be counted over at least eight different preparations of representative subsamples. Take eight forcep samples and mount each separately with the appropriate refractive index liquid. The preparation should not be heavily loaded. The sample should be uniformly dispersed to avoid overlapping particles and allow 25-50 percent empty area within the fields of view. Count 50 nonempty points on each preparation, using either

• A cross-hair reticle and mechanical stage; or

• A reticle with 25 points (Chalkley Point Array) and counting at least 2 randomly selected fields.

For samples with mixtures of isotropic and anisotropic materials present, viewing the sample with slightly uncrossed polars or the addition of the compensator plate to the polarized light path will allow simultaneous discrimination of both particle types. Quantitation should be performed at 100X or at the lowest magnification of the polarized light microscope that can effectively distinguish the sample components. Confirmation of the quantitation result by a second analyst on some percentage of analyzed samples should be used as standard quality control procedure.

The percent asbestos is calculated as follows:

% asbestos = (a/n) 100%

where

a = number of asbestos counts,

n = number of nonempty points counted (400).

If a = 0, report "No asbestos detected." If 0<a≤3, report "<1% asbestos".

The value reported should be rounded to the nearest percent.

1.8 References

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Section 2. X-Ray Powder Diffraction

2.1 Principle and Applicability

The principle of X-ray powder diffraction (XRD) analysis is well established.[1] [2] Any solid, crystalline material will diffract an impingent beam of parallel, monochromatic X-rays whenever Bragg's Law,

$\lambda = 2d \sin \theta$,

is satisfied for a particular set of planes in the crystal lattice, where

λ = the X-ray wavelength, Å;

d = the interplanar spacing of the set of reflecting lattice planes, Å; and

θ = the angle of incidence between the X-ray beam and the reflecting lattice planes.

By appropriate orientation of a sample relative to the incident X-ray beam, a diffraction pattern can be generated that, in most cases, will be uniquely characteristic of both the chemical composition and structure of the crystalline phases present.

Unlike optical methods of analysis, however, XRD cannot determine crystal morphology. Therefore, in asbestos analysis, XRD does not distinguish between fibrous and nonfibrous forms of the serpentine and amphibole minerals (Table 2-1). However, when used in conjunction with optical methods such as polarized light microscopy (PLM), XRD techniques can provide a reliable analytical method for the identification and characterization of asbestiform minerals in bulk materials.

For *qualitative analysis* by XRD methods, samples are initially scanned over limited diagnostic peak regions for the serpentine (~7.4 Å) and amphibole (8.2-8.5 Å) minerals (Table 2-2). Standard slow-scanning methods for bulk sample analysis may be used for materials shown by PLM to contain significant amounts of asbestos (>5-10 percent). Detection of minor or trace amounts of asbestos may require special sample preparation and step-scanning analysis. All samples that exhibit diffraction peaks in the diagnostic regions for asbestiform minerals are submitted to a full (5°-60° 2θ; 1° 2θ/min) qualitative XRD scan, and their diffraction patterns are compared with standard reference powder diffraction patterns[3] to verify initial peak assignments and to identify possible matrix interferences when subsequent quantitative analysis will be performed.

Table 2-1 - The Asbestos Minerals and Their Nonasbestiform Analogs

Asbestiform	Nonasbestiform
SERPENTINE	
Chrysotile	Antigorite, lizardite
AMPHIBOLE	
Anthophyllite asbestos	Anthophyllite
Cummingtonite-grunerite asbestos ("Amosite")	Cummingtonite-grunerite
Crocidolite	Riebeckite
Tremolite asbestos	Tremolite

Asbestiform	Nonasbestiform
Actinolite asbestos	Actinolite

Table 2-2 - Principal Lattice Spacings of Asbestiform Minerals [a]

Minerals	Principal d-spacings (Å) and relative intensities			JCPDS Powder diffraction file[3] number
Chrysotile	7.37_{100}	3.65_{70}	4.57_{50}	21-543[b]
	7.36_{100}	3.66_{80}	2.45_{65}	25-645
	7.10_{100}	2.33_{80}	3.55_{70}	22-1162 (theoretical)
"Amosite"	8.33_{100}	3.06_{70}	2.756_{70}	17-745 (nonfibrous)
	8.22_{100}	3.060_{85}	3.25_{70}	27-1170 (UICC)
Anthophyllite	3.05_{100}	3.24_{60}	8.26_{55}	9-455
	3.06_{100}	8.33_{70}	3.23_{50}	16-401 (synthetic)
Anthophyllite	2.72_{100}	2.54_{100}	3.480_{80}	25-157
Crocidolite	8.35_{100}	3.10_{55}	2.720_{35}	27-1415 (UICC)
Tremolite	8.38_{100}	3.12_{100}	2.705_{90}	13-437[b]
	2.706_{100}	3.14_{95}	8.43_{40}	20-1310[b] (synthetic)
	3.13_{100}	2.706_{60}	8.44_{40}	23-666 (synthetic mixture with richterite)

[a] This information is intended as a guide, only. Complete powder diffraction data, including mineral type and source, should be referred to, to ensure comparability of sample and reference materials where possible. Additional precision XRD data on amosite, crocidolite, tremolite, and chrysotile are available from the U.S. Bureaus of Mines.[4]

[b] Fibrosity questionable.

Accurate *quantitative analysis* of asbestos in bulk samples by XRD is critically dependent on particle size distribution, crystallite size, preferred orientation and matrix absorption effects, and comparability of standard reference and sample materials. The most intense diffraction peak that has been shown to be free from interference by prior qualitative XRD analysis is selected for quantitation of each asbestiform mineral. A "thin-layer" method of analysis[5] [6] is recommended in which, subsequent to comminution of the bulk material to ~10 µm by suitable cryogenic milling techniques, an accurately known amount of the sample is deposited on a silver membrane filter. The mass of asbestiform material is determined by measuring the integrated area of the selected diffraction peak using a step-scanning mode, correcting for matrix absorption effects, and comparing with suitable calibration standards. Alternative "thick-layer" or bulk methods,[7] [8] may be used for *semiquantitative analysis*.

This XRD method is applicable as a confirmatory method for identification and quantitation of asbestos in bulk material samples that have undergone prior analysis by PLM or other optical methods.

2.2 Range and Sensitivity

The range of the method has not been determined.

The sensitivity of the method has not been determined. It will be variable and dependent upon many factors, including matrix effects (absoprtion and interferences), diagnostic reflections selected, and their relative intensities.

2.3 Limitations

2.3.1 Interferences

Since the fibrous and nonfibrous forms of the serpentine and amphibole minerals (Table 2-1) are indistinguishable by XRD techniques unless special sample preparation techniques and instrumentation are used,[9] the presence of nonasbestiform serpentines and amphiboles in a sample will pose severe interference problems in the identification and quantitative analysis of their asbestiform analogs.

The use of XRD for identification and quantitation of asbestiform minerals in bulk samples may also be limited by the presence of other interfering materials in the sample. For naturally occurring materials the commonly associated asbestos-related mineral interferences can usually be anticipated. However, for fabricated materials the nature of the interferences may vary greatly (Table 2-3) and present more serious problems in identification and quantitation.[10] Potential interferences are summarized in Table 2-4 and include the following:

• *Chlorite* has major peaks at 7.19 Å and 3.58 Å That interfere with both the primary (7.36 Å) and secondary (3.66 Å) peaks for chrysotile. Resolution of the primary peak to give good quantitative results may be possible when a step-scanning mode of operation is employed.

• *Halloysite* has a peak at 3.63 Å that interferes with the secondary (3.66 Å) peak for chrysotile.

• *Kaolinite* has a major peak at 7.15 Å that may interfere with the primary peak of chrysotile at 7.36 Å when present at concentrations of >10 percent. However, the secondary chrysotile peak at 3.66 Å may be used for quantitation.

• *Gypsum* has a major peak at 7.5 Å that overlaps the 7.36 Å peak of chrysotile when present as a major sample constituent. This may be removed by careful washing with distilled water, or be heating to 300 °C to convert gypsum to plaster of paris.

• *Cellulose* has a broad peak that partially overlaps the secondary (3.66 Å) chrysotile peak.[8]

• Overlap of major diagnostic peaks of the amphibole asbestos minerals, amosite, anthophyllite, crocidolite, and tremolite, at approximately 8.3 Å and 3.1 Å causes mutual interference when these minerals occur in the presence of one another. In some instances, adequate resolution may be attained by using step-scanning methods and/or by decreasing the collimator slit width at the X-ray port.

Table 2-3 - Common Constituents in Insulation and Wall Materials

A. Insulation materials

Chrysotile

"Amosite"

Crocidolite

*Rock wool

*Slag wool

*Fiber glass

Gypsum ($CaSO_4 \cdot 2H_2O$)

Vermiculite (micas)

*Perlite

Clays (kaolin)

*Wood pulp

*Paper fibers (talc, clay, carbonate fillers)

Calcium silicates (synthetic)

Opaques (chromite, magnetite inclusions in serpentine)

Hematite (inclusions in "amosite")

Magnesite

*Diatomaceous earth

B. Spray finishes or paints

Bassanite

Carbonate minerals (calcite, dolomite, vaterite)

Talc

Tremolite

Anthophyllite

Serpentine (including chrysotile)

Amosite

Crocidolite

*Mineral wool

*Rock wool

*Slag wool

*Fiber glass

Clays (kaolin)

Micas

Chlorite

Gypsum ($CaSO_4 \cdot 2H_2O$)

Quartz

*Organic binders and thickeners

Hyrdomagnesite

Wollastonite

Opaques (chromite, magnetite inclusions in serpentine)

Hematite (inclusions in "amosite")

*Amorphous materials____contribute only to overall scattered radiation and increased background radiation.

Table 2-4 - Interferences in XRD Analysis Asbestiform Minerals

Asbestiform mineral	Primary diagnostic peaks (approximate d-spacings, in Å)	Interference
Serpentine		
Chrysotile	7.4	Nonasbestiform serpentines (antigorite, lizardite) Chlorite Kaolinite Gypsum
	3.7	Chlorite Halloysite Cellulose
Amphibole		
"Amosite" Anthophyllite } Crocidolite Tremolite	3.1	Nonasbestiform amphiboles (cummingtonite-grunerite, anthophyllite, riebeckite, tremolite) Mutual interferences Carbonates Talc
	8.3	Mutual interferences

• *Carbonates* may also interfere with quantitative analysis of the amphibole asbestos minerals, amosite, anthophyllite, crocidolite, and tremolite. Calcium carbonate ($CaCO_3$) has a peak at 3.035 Å that overlaps major amphibole peaks at approximately 3.1 Å when present in concentrations of >5 percent. Removal of carbonates with a dilute acid wash is possible; however, if present, chrysotile may be partially dissolved by this treatment.[11]

• A major *talc* peak at 3.12 Å interferes with the primary tremolite peak at this same position and with secondary peaks of crocidolite (3.10 Å), amosite (3.06 Å), and anthophyllite (3.05 Å). In the presence of talc, the major diagnostic peak at approximately 8.3 Å should be used for quantitation of these asbestiform minerals.

The problem of intraspecies and matrix interferences is further aggravated by the variability of the silicate mineral powder diffraction patterns themselves, which often makes definitive identification of the asbestos minerals by comparison with standard reference diffraction patterns difficult. This variability results from alterations in the crystal lattice associated with differences in isomorphous substitution and degree of crystallinity. This is especially true for the amphiboles. These minerals exhibit a wide variety of

very similar chemical compositions, with the result being that their diffraction patterns are chracterized by having major (110) reflections of the monoclinic amphiboles and (210) reflections of the orthorhombic anthophyllite separated by less than 0.2 Å.[12]

2.3.2 Matrix Effects

If a copper X-ray source is used, the presence of iron at high concentrations in a sample will result in significant X-ray fluorescence, leading to loss of peak intensity along with increased background intensity and an overall decrease in sensitivity. This situation may be corrected by choosing an X-ray source other than copper; however, this is often accompanied both by loss of intensity and by decreased resolution of closely spaced reflections. Alternatively, use of a diffracted beam monochromator will reduce background fluorescent raditation, enabling weaker diffraction peaks to be detected.

X-ray absorption by the sample matrix will result in overall attenuation of the diffracted beam and may seriously interfere with quantitative analysis. Absorption effects may be minimized by using sufficiently "thin" samples for analysis.[5 13 14] However, unless absorption effects are known to be the same for both samples and standards, appropriate corrections should be made by referencing diagnostic peak areas to an internal standard[7 8] or filter substrate (Ag) peak.[5 6]

2.3.3 Particle Size Dependence

Because the intensity of diffracted X-radiation is particle-size dependent, it is essential for accurate quantitative analysis that both sample and standard reference materials have similar particle size distributions. The optimum particle size range for quantitative analysis of asbestos by XRD has been reported to be 1 to 10 µm.[15] Comparability of sample and standard reference material particle size distributions should be verified by optical microscopy (or another suitable method) prior to analysis.

2.3.4 Preferred Orientation Effects

Preferred orientation of asbestiform minerals during sample preparation often poses a serious problem in quantitative analysis by XRD. A number of techniques have been developed for reducing preferred orientation effects in "thick layer" samples.[7 8 15] However, for "thin" samples on membrane filters, the preferred orientation effects seem to be both reproducible and favorable to enhancement of the principal diagnostic reflections of asbestos minerals, actually increasing the overall sensitivity of the method.[12 14] (Further investigation into preferred orientation effects in both thin layer and bulk samples is required.)

2.3.5 Lack of Suitably Characterized Standard Materials

The problem of obtaining and characterizing suitable reference materials for asbestos analysis is clearly recognized. NIOSH has recently directed a major research effort toward the preparation and characterization of analytical reference materials, including asbestos standards;[16 17] however, these are not available in large quantities for routine analysis.

In addition, the problem of ensuring the comparability of standard reference and sample materials, particularly regarding crystallite size, particle size distribution, and degree of crystallinity, has yet to be adequately addressed. For example, Langer et al.[18] have observed that in insulating matrices, chrysotile

tends to break open into bundles more frequently than amphiboles. This results in a line-broadening effect with a resultant decrease in sensitivity. Unless this effect is the same for both standard and sample materials, the amount of chrysotile in the sample will be underestimated by XRD analysis. To minimize this problem, it is recommended that standardized matrix reduction procedures be used for both sample and standard materials.

2.4 Precision and Accuracy

Precision of the method has not been determined.

Accuracy of the method has not been determined.

2.5 Apparatus

2.5.1 Sample Preparation

Sample preparation apparatus requirements will depend upon the sample type under consideration and the kind of XRD analysis to be performed.

• *Mortar and Pestle:* Agate or porcelain.

• *Razor Blades*

• *Sample Mill:* SPEX, Inc., freezer mill or equivalent.

• *Bulk Sample Holders*

• *Silver Membrane Filters:* 25-mm diameter, 0.45-µm pore size. Selas Corp. of America, Flotronics Div., 1957 Pioneer Road, Huntington Valley, PA 19006.

• *Microscope Slides*

• *Vacuum Filtration Apparatus:* Gelman No. 1107 or equivalent, and side-arm vacuum flask.

• *Microbalance*

• *Ultrasonic Bath or Probe:* Model W140, Ultrasonics, Inc., operated at a power density of approximately 0.1 W/mL, or equivalent.

• *Volumetric Flasks:* 1-L volume.

• *Assorted Pipettes*

• *Pipette Bulb*

• *Nonserrated Forceps*

• *Polyethylene Wash Bottle*

• *Pyrex Beakers:* 50-mL volume.

• *Desiccator*

• *Filter Storage Cassettes*

• *Magnetic Stirring Plate and Bars*

• *Porcelain Crucibles*

• *Muffle Furnace or Low Temperature Asher*

2.5.2 Sample Analysis

Sample analysis requirements include an X-ray diffraction unit, equipped with:

• *Constant Potential Generator; Voltage and mA Stabilizers*

• *Automated Diffractometer with Step-Scanning Mode*

• *Copper Target X-Ray Tube:* High intensity, fine focus, preferably.

• *X-Ray Pulse Height Selector*

• *X-Ray Detector* (with high voltage power supply): Scintillation or proportional counter.

• *Focusing Graphite Crystal Monochromator;* or *Nickel Filter* (if copper source is used, and iron fluorescence is not a serious problem).

• *Data Output Accessories:*

• *Strip Chart Recorder*

• *Decade Scaler/Timer*

• *Digital Printer*

• *Sample Spinner* (optional).

• *Instrument Calibration Reference Specimen:* α-quartz reference crystal (Arkansas quartz standard, #180-147-00, Philips Electronics Instruments, Inc., 85 McKee Drive, Mahwah, NJ 07430) or equivalent.

2.6 Reagents

2.6.1 Standard Reference Materials

The reference materials listed below are intended to serve as a guide. Every attempt should be made to acquire pure reference materials that are comparable to sample materials being analyzed.

• *Chrysotile:* UICC Canadian, or NIEHS Plastibest. (UICC reference materials available from: UICC, MRC Pneumoconiosis Unit, Llandough Hospital, Penarth, Glamorgan, CF61XW, UK).

• *Crocidolite:* UICC

• *Amosite:* UICC

• *Anthophyllite:* UICC

• *Tremolite Asbestos:* Wards Natural Science Establishment, Rochester, N.Y.; Cyprus Research Standard, Cyprus Research, 2435 Military Ave., Los Angeles, CA 90064 (washed with dilute HCl to remove small amount of calcite impurity); India tremolite, Rajasthan State, India.

• *Actinolite Asbestos*

2.6.2 Adhesive

Tape, petroleum jelly, etc. (for attaching silver membrane filters to sample holders).

2.6.3 Surfactant

1 percent aerosol OT aqueous solution or equivalent.

2.6.4 Isopropanol

ACS Reagent Grade.

2.7 Procedure

2.7.1 Sampling

Samples for analysis of asbestos content shall be collected as specified in EPA Guidance Document #C0090, *Asbestos-Containing Materials in School Buildings.*[10]

2.7.2 Analysis

All samples must be analyzed initially for asbestos content by PLM. XRD should be used as an auxiliary method when a second, independent analysis is requested.

Note: Asbestos is a toxic substance. All handling of dry materials should be performed in an operating fume hood.

2.7.2.1 Sample Preparation

The method of sample preparation required for XRD analysis will depend on: (1) The condition of the sample received (sample size, homogeneity, particle size distribution, and overall composition as determined by PLM); and (2) the type of XRD analysis to be performed (qualitative, quantitative, thin layer or bulk).

Bulk materials are usually received as inhomogeneous mixtures of complex composition with very wide particle size distributions. Preparation of a homogeneous, representative sample from asbestos-containing materials is particularly difficult because the fibrous nature of the asbestos minerals inhibits mechanical mixing and stirring, and because milling procedures may cause adverse lattice alterations.

A discussion of specific matrix reduction procedures is given below. Complete methods of sample preparation are detailed in Sections 2.7.2.2 and 2.7.2.3.

Note: All samples should be examined microscopically before and after each matrix reduction step to monitor changes in sample particle size, composition, and crystallinity, and to ensure sample representativeness and homogeneity for analysis.

2.7.2.1.1 *Milling* - Mechanical milling of asbestos materials has been shown to decrease fiber crystallinity, with a resultant decrease in diffraction intensity of the specimen; the degree of lattice alteration is related to the duration and type of milling process.[19 22] Therefore, all milling times should be kept to a minimum.

For *qualitative analysis,* particle size is not usually of critical importance and initial characterization of the material with a minimum of matrix reduction is often desirable to document the composition of the sample as received. Bulk samples of very large particle size (>2-3 mm) should be comminuted to ~100 µm. A mortar and pestle can sometimes be used in size reduction of soft or loosely bound materials though this may cause matting of some samples. Such samples may be reduced by cutting with a razor blade in a mortar, or by grinding in a suitable mill (e.g., a microhammer mill or equivalent). When using a mortar for grinding or cutting, the sample should be moistened with ethanol, or some other suitable wetting agent, to minimize exposures.

For accurate, reproducible *quantitative analysis,* the particle size of both sample and standard materials should be reduced to ~10 µm (see Section 2.3.3). Dry ball milling at liquid nitrogen temperatures (e.g., Spex Freezer Mill, or equivalent) for a maximum time of 10 min. is recommended

to obtain satisfactory particle size distributions while protecting the integrity of the crystal lattice.[5] Bulk samples of very large particle size may require grinding in two stages for full matrix reduction to <10 µm.[8 16]

Final particle size distributions should always be verified by optical microscopy or another suitable method.

2.7.2.1.2 *Low temperature ashing* - For materials shown by PLM to contain large amounts of gypsum, cellulosic, or other organic materials, it may be desirable to ash the samples prior to analysis to reduce background radiation or matrix interference. Since chrysotile undergoes dehydroxylation at temperatures between 550 °C and 650 °C, with subsequent transformation to forsterite,[23 24] ashing temperatures should be kept below 500 °C. Use of a low temperature asher is recommended. In all cases, calibration of the oven is essential to ensure that a maximum ashing temperature of 500 °C is not exceeded.

2.7.2.1.3 *Acid leaching* - Because of the interference caused by gypsum and some carbonates in the detection of asbestiform minerals by XRD (see Section 2.3.1), it may be necessary to remove these interferents by a simple acid leaching procedure prior to analysis (see Section 1.7.2.2).

2.7.2.2 Qualitative Analysis

2.7.2.2.1 *Initial screening of bulk material* - Qualitative analysis should be performed on a representative, homogeneous portion of the sample with a minimum of sample treatment.

1. Grind and mix the sample with a mortar and pestle (or equivalent method, see Section 2.7.2.1.1.) to a final particle size sufficiently small (~100 µm) to allow adequate packing into the sample holder.
2. Pack the sample into a standard bulk sample holder. Care should be taken to ensure that a representative portion of the milled sample is selected for analysis. Particular care should be taken to avoid possible size segregation of the sample. (Note: Use of a back-packing method[25] of bulk sample preparation may reduce preferred orientation effects.)
3. Mount the sample on the diffractometer and scan over the diagnostic peak regions for the serpentine (~67.4 Å) and amphibole (8.2-8.5 Å) minerals (see Table 2-2). The X-ray diffraction equipment should be optimized for intensity. A slow scanning speed of 1° 2_θ/min is recommended for adequate resolution. Use of a sample spinner is recommended.
4. Submit all samples that exhibit diffraction peaks in the diagnostic regions for asbestiform minerals to a full qualitative XRD scan (5°-60° 2_θ; 1°2_θ/min) to verify initial peak assignments and to identify potential matrix interferences when subsequent quantitative analysis is to be performed.
5. Compare the sample XRD pattern with standard reference powder diffraction patterns (i.e., JCPDS powder diffraction data[3] or those of other well-characterized reference materials). Principal lattice spacings of asbestiform minerals are given in Table 2-2; common constituents of bulk insulation and wall materials are listed in Table 2-3.

   2.7.2.2.2 *Detection of minor or trace constituents* - Routine screening of bulk materials by XRD may fail to detect small concentrations (<5 percent) of asbestos. The limits of detection will, in general, be improved if matrix absorption effects are minimized, and if the sample particle size

is reduced to the optimal 1 to 10 µm range, provided that the crystal lattice is not degraded in the milling process. Therefore, in those instances where confirmation of the presence of an asbestiform mineral at very low levels is required, or where a negative result from initial screening of the bulk material by XRD (see Section 2.7.2.2.1) is in conflict with previous PLM results, it may be desirable to prepare the sample as described for quantitative analysis (see Section 2.7.2.3) and step-scan over appropriate 2_θ ranges of selected diagnostic peaks (Table 2-2). Accurate transfer of the sample to the silver membrane filter is not necessary unless subsequent quantitative analysis is to be performed.

2.7.2.3 Quantitative Analysis

The proposed method for quantitation of asbestos in bulk samples is a modification of the NIOSH-recommended thin-layer method for chrysotile in air.[5] A thick-layer or bulk method involving pelletizing the sample may be used for semiquantitative analysis;[7] [8] however, this method requires the addition of an internal standard, use of a specially fabricated sample press, and relatively large amounts of standard reference materials. Additional research is required to evaluate the comparability of thin- and thick-layer methods for quantitative asbestos analysis.

For quantitative analysis by thin-layer methods, the following procedure is recommended:

1. Mill and size all or a substantial representative portion of the sample as outlined in Section 2.7.2.1.1.
2. Dry at 100 °C for 2 hr; cool in a desiccator.
3. Weigh accurately to the nearest 0.01 mg.
4. Samples shown by PLM to contain large amounts of cellulosic or other organic materials, gypsum, or carbonates, should be submitted to appropriate matrix reduction procedures described in Sections 2.7.2.1.2 and 2.7.2.1.3. After ashing and/or acid treatment, repeat the drying and weighing procedures described above, and determine the percent weight loss; L.
5. Quantitatively transfer an accurately weighed amount (50-100 mg) of the sample to a 1-L volumetric flask with approximately 200 mL isopropanol to which 3 to 4 drops of surfactant have been added.
6. Ultrasonicate for 10 min at a power density of approximately 0.1 W/mL, to disperse the sample material.
7. Dilute to volume with isopropanol.
8. Place flask on a magnetic stirring plate. Stir.
9. Place a silver membrane filter on the filtration apparatus, apply a vacuum, and attach the reservoir. Release the vacuum and add several milliliters of isopropanol to the reservoir. Vigorously hand shake the asbestos suspension and immediately withdraw an aliquot from the center of the suspension so that total sample weight, W_T, on the filter will be approximately 1 mg. Do not adjust the volume in the pipet by expelling part of the suspension; if more than the desired aliquot is withdrawn, discard the aliquot and resume the procedure with a clean pipet. Transfer the aliquot to the reservoir. Filter rapidly under vacuum. Do not wash the reservoir walls. Leave the filter apparatus under vacuum until dry. Remove the reservoir, release the

vacuum, and remove the filter with forceps. (Note: Water-soluble matrix interferences such as gypsum may be removed at this time by careful washing of the filtrate with distilled water. Extreme care should be taken not to disturb the sample.)

10. Attach the filter to a flat holder with a suitable adhesive and place on the diffractometer. Use of a sample spinner is recommended.

11. For each asbestos mineral to be quantitated select a reflection (or reflections) that has been shown to be free from interferences by prior PLM or qualitative XRD analysis and that can be used unambiguously as an index of the amount of material present in the sample (see Table 2-2).

12. Analyze the selected diagnostic reflection(s) by step scanning in increments of 0.02° 2_θ for an appropriate fixed time and integrating the counts. (A fixed count scan may be used alternatively; however, the method chosen should be used consistently for all samples and standards.) An appropriate scanning interval should be selected for each peak, and background corrections made. For a fixed time scan, measure the background on each side of the peak for one-half the peak-scanning time. The net intensity, I_a, is the difference between the peak integrated count and the total background count.

13. Determine the net count, I_{Ag}, of the filter 2.36 Å silver peak following the procedure in step 12. Remove the filter from the holder, reverse it, and reattach it to the holder. Determine the net count for the unattenuated silver peak, $I_{Å g.}$ Scan times may be *less* for measurement of silver peaks than for sample peaks; however, they should be *constant* throughout the analysis.

14. Normalize all raw, net intensities (to correct for instrument instabilities) by referencing them to an external standard (e.g., the 3.34 Å peak of an α-quartz reference crystal). After each unknown is scanned, determine the net count, I_r, of the reference specimen following the procedure in step 12. Determine the normalized intensities by dividing the peak intensities by I_r:

$$\hat{I}_a = \frac{I_a}{I^\circ_r}, \quad \hat{I}_{Ag} = \frac{I_{Ag}}{I^\circ_r}, \quad \text{and} \quad \hat{I}^\circ_{Ag} = \frac{I^\circ_{Ag}}{I^\circ_r}$$

2.8 Calibration

2.8.1 Preparation of Calibration Standards

1. Mill and size standard asbestos materials according to the procedure outlined in Section 2.7.2.1.1. *Equivalent, standardized matrix reduction and sizing techniques should be used for both standard and sample materials.*

2. Dry at 100 °C for 2 hr; cool in a desiccator.

3. Prepare two suspensions of each standard in isopropanol by weighing approximately 10 and 50 mg of the dry material to the nearest 0.01 mg. Quantitatively transfer each to a 1-L volumetric flask with approximately 200 mL isopropanol to which a few drops of surfactant have been added.
4. Ultrasonicate for 10 min at a power density of approximately 0.1 W/mL, to disperse the asbestos material.
5. Dilute to volume with isopropanol.
6. Place the flask on a magnetic stirring plate. Stir.
7. Prepare, in triplicate, a series of at least five standard filters to cover the desired analytical range, using appropriate aliquots of the 10 and 50 mg/L suspensions and the following procedure.

Mount a silver membrane filter on the filtration apparatus. Place a few milliliters of isopropanol in the reservoir. Vigorously hand shake the asbestos suspension and immediately withdraw an aliquot from the center of the suspension. Do not adjust the volume in the pipet by expelling part of the suspension; if more than the desired aliquot is withdrawn, discard the aliquot and resume the procedure with a clean pipet. Transfer the aliquot to the reservoir. Keep the tip of the pipet near the surface of the isopropanol. Filter rapidly under vacuum. Do not wash the sides of the reservoir. Leave the vacuum on for a time sufficient to dry the filter. Release the vacuum and remove the filter with forceps.

2.8.2 Analysis of Calibration Standards

1. Mount each filter on a flat holder. Perform step scans on selected diagnostic reflections of the standards and reference specimen using the procedure outlined in Section 2.7.2.3, step 12, and the same conditions as those used for the samples.
2. Determine the normalized intensity for each peak measured, $\hat{I}_{std}$, as outlined in Section 2.7.2.3, step 14.

2.9 Calculations

For each asbestos reference material, calculate the exact weight deposited on each standard filter from the concentrations of the standard suspensions and aliquot volumes. Record the weight, w, of each standard. Prepare a calibration curve by regressing $\hat{I}2_{std}$ on w. Poor reproducibility (±15 percent RSD) at any given level indicates problems in the sample preparation technique, and a need for new standards. The data should fit a straight line equation.

Determine the slope, m, of the calibration curve in counts/microgram. The intercept, b, of the line with the $\hat{I}_{std}$ axis should be approximately zero. A large negative intercept indicates an error in determining the background. This may arise from incorrectly measuring the baseline or from interference by another phase at the angle of background measurement. A large positive intercept indicates an error in determining the baseline or that an impurity is included in the measured peak.

Using the normalized intensity, $\hat{I}_{Ag}$, for the attenuated silver peak of a sample, and the corresponding normalized intensity from the unattenuated silver peak, $\hat{I}_{\mathring{A}g}$, of the sample filter, calculate the transmittance, T, for each sample as follows:[26] [27]

$$T = \frac{\hat{I}_{Ag}}{I^{\circ}_{Ag}}$$

Determine the correction factor, f(T), for each sample according to the formula:

		-R (ln T)	
	f (T) =___		
		$1\text{-}T^{R}$	

where

		$\sin \Theta_{Ag}$	
	R =	_____	
		$\sin \Theta_{a}$	

θ_{Ag} = angular position of the measured silver peak (from Bragg's Law), and

θ_{a} = angular position of the diagnostic asbestos peak.

Calculate the weight, W_a, in micrograms, of the asbestos material analyzed for in each sample, using the appropriate calibration data and absorption corrections:

$$W_a = \frac{\hat{I}_a f(t) - b}{m}$$

Calculate the percent composition, P_a, of each asbestos mineral analyzed for in the parent material, from the total sample weight, W_T, on the filter:

		$W_a(1\text{-}.01L)$	
	P_a =	_____ -	x 100
		W_T	

where

P_a = percent asbestos mineral in parent material;

W_a = mass of asbestos mineral on filter, in μg;

W_T = total sample weight on filter, in µg;

L = percent weight loss of parent material on ashing and/or acid treatment (see Section 2.7.2.3).

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Subpart F [Reserved]

Subpart G - Asbestos Worker Protection

Source: 65 FR 69216, Nov. 15, 2000, unless otherwise noted.

§ 763.120 What is the purpose of this subpart?

This subpart protects certain State and local government employees who are not protected by the Asbestos Standards of the Occupational Safety and Health Administration (OSHA). This subpart applies the OSHA Asbestos Standards in 29 CFR 1910.1001 and 29 CFR 1926.1101 to these employees.

§ 763.121 Does this subpart apply to me?

If you are a State or local government employer and you are not subject to a State asbestos standard that OSHA has approved under section 18 of the Occupational Safety and Health Act or a State asbestos plan that EPA has exempted from the requirements of this subpart under § 763.123, you must follow the requirements of this subpart to protect your employees from occupational exposure to asbestos.

§ 763.122 What does this subpart require me to do?

If you are a State or local government employer whose employees perform:

(a) Construction activities identified in 29 CFR 1926.1101(a), you must:

(1) Comply with the OSHA standards in 29 CFR 1926.1101.

(2) Submit notifications required for alternative control methods to the Director, National Program Chemicals Division (7404), Office of Pollution Prevention and Toxics, Environmental Protection Agency, 1200 Pennsylvania Ave., NW., Washington, DC 20460.

(b) Custodial activities not associated with the construction activities identified in 29 CFR 1926.1101(a), you must comply with the OSHA standards in 29 CFR 1910.1001.

(c) Repair, cleaning, or replacement of asbestos-containing clutch plates and brake pads, shoes, and linings, or removal of asbestos-containing residue from brake drums or clutch housings, you must comply with the OSHA standards in 29 CFR 1910.1001.

§ 763.123 May a State implement its own asbestos worker protection plan?

This section describes the process under which a State may be exempted from the requirements of this subpart.

(a) ***States seeking an exemption.*** If your State wishes to implement its own asbestos worker protection plan, rather than complying with the requirements of this subpart, your State must apply for and receive an exemption from EPA.

(1) ***What must my State do to apply for an exemption?*** To apply for an exemption from the requirements of this subpart, your State must send to the Director of EPA's Office of Pollution Prevention and Toxics (OPPT) a copy of its asbestos worker protection regulations and a detailed explanation of how your State's asbestos worker protection plan meets the requirements of TSCA section 18 (15 U.S.C. 2617).

(2) ***What action will EPA take on my State's application for an exemption?*** EPA will review your State's application and make a preliminary determination whether your State's asbestos worker protection plan meets the requirements of TSCA section 18.

(i) If EPA's preliminary determination is that your State's plan does meet the requirements of TSCA section 18, EPA will initiate a rulemaking, including an opportunity for public comment, to exempt your State from the requirements of this subpart. After considering any comments, EPA will issue a final rule granting or denying the exemption.

(ii) If EPA's preliminary determination is that the State plan does not meet the requirements of TSCA section 18, EPA will notify your State in writing and will give your State a reasonable opportunity to respond to that determination.

(iii) If EPA does not grant your State an exemption, then the State and local government employers in your State are subject to the requirements of this subpart.

(b) ***States that have been granted an exemption.*** If EPA has exempted your State from the requirements of this subpart, your State must update its asbestos worker protection regulations as necessary to implement changes to meet the requirements of this subpart, and must apply to EPA for an amendment to its exemption.

(1) ***What must my State do to apply for an amendment to its exemption?*** To apply for an amendment to its exemption, your State must send to the Director of OPPT a copy of its updated asbestos worker protection regulations and a detailed explanation of how your State's updated asbestos worker protection plan meets the requirements of TSCA section 18. Your State must submit its application for an amendment within 6 months of the effective date of any changes to the requirements of this subpart, or within a reasonable time agreed upon by your State and OPPT.

(2) ***What action will EPA take on my State's application for an amendment?*** EPA will review your State's application for an amendment and make a preliminary determination whether your State's updated asbestos worker protection plan meets the requirements of TSCA section 18.

(i) If EPA determines that the updated State plan does meet the requirements of TSCA section 18, EPA will issue your State an amended exemption.

(ii) If EPA determines that the updated State plan does not meet the requirements of TSCA section 18, EPA will notify your State in writing and will give your State a reasonable opportunity to respond to that determination.

(iii) If EPA does not grant your State an amended exemption, or if your State does not submit a timely request for amended exemption, then the State and local government employers in your State are subject to the requirements of this subpart.

Subpart H [Reserved]

Subpart I - Prohibition of the Manufacture, Importation, Processing, and Distribution in Commerce of Certain Asbestos-Containing Products; Labeling Requirements

Source: 54 FR 29507, July 12, 1989, unless otherwise noted.

§ 763.160 Scope.

This subpart prohibits the manufacture, importation, processing, and distribution in commerce of the asbestos-containing products identified and at the dates indicated in §§ 763.165, 763.167, and 763.169. This subpart requires that products subject to this rule's bans, but not yet subject to a ban on distribution in commerce, be labeled. This subpart also includes general exemptions and procedures for requesting exemptions from the provisions of this subpart.

§ 763.163 Definitions.

For purposes of this subpart:

Act means the Toxic Substances Control Act, 15 U.S.C. 2601 *et seq.*

Agency means the United States Environmental Protection Agency.

Asbestos means the asbestiform varieties of: chrysotile (serpentine); crocidolite (riebeckite); amosite (cummingtonite-grunerite); tremolite; anthophyllite; and actinolite.

Asbestos-containing product means any product to which asbestos is deliberately added in any concentration or which contains more than 1.0 percent asbestos by weight or area.

Chemical substance, has the same meaning as in section 3 of the Act.

Commerce has the same meaning as in section 3 of the Act.

Commercial paper means an asbestos-containing product which is made of paper intended for use as general insulation paper or muffler paper. Major applications of commercial papers are insulation against fire, heat transfer, and corrosion in circumstances that require a thin, but durable, barrier.

Corrugated paper means an asbestos-containing product made of corrugated paper, which is often cemented to a flat backing, may be laminated with foils or other materials, and has a corrugated surface. Major applications of asbestos corrugated paper include: thermal insulation for pipe coverings; block insulation; panel insulation in elevators; insulation in appliances; and insulation in low-pressure steam, hot water, and process lines.

Customs territory of the United States means the 50 States, Puerto Rico, and the District of Columbia.

Distribute in commerce has the same meaning as in section 3 of the Act, but the term does not include actions taken with respect to an asbestos-containing product (to sell, resale, deliver, or hold) in connection with the end use of the product by persons who are users (persons who use the product for its intended purpose after it is manufactured or processed). The term also does not include distribution by manufacturers, importers, and processors, and other persons solely for purposes of disposal of an asbestos-containing product.

Flooring felt means an asbestos-containing product which is made of paper felt intended for use as an underlayer for floor coverings, or to be bonded to the underside of vinyl sheet flooring.

Import means to bring into the customs territory of the United States, except for:

(1) Shipment through the customs territory of the United States for export without any use, processing, or disposal within the customs territory of the United States; or

(2) entering the customs territory of the United States as a component of a product during normal personal or business activities involving use of the product.

Importer means anyone who imports a chemical substance, including a chemical substance as part of a mixture or article, into the customs territory of the United States. *Importer* includes the person primarily liable for the payment of any duties on the merchandise or an authorized agent acting on his or her behalf. The term includes as appropriate:

(1) The consignee.

(2) The importer of record.

(3) The actual owner if an actual owner's declaration and superseding bond has been filed in accordance with 19 CFR 141.20.

(4) The transferee, if the right to withdraw merchandise in a bonded warehouse has been transferred in accordance with subpart C of 19 CFR part 144.

Manufacture means to produce or manufacture in the United States.

Manufacturer means a person who produces or manufactures in the United States.

New uses of asbestos means commercial uses of asbestos not identified in § 763.165 the manufacture, importation or processing of which would be initiated for the first time after August 25, 1989.

Person means any natural person, firm, company, corporation, joint-venture, partnership, sole proprietorship, association, or any other business entity; any State or political subdivision thereof, or any municipality; any interstate body and any department, agency, or instrumentality of the Federal Government.

Process has the same meaning as in section 3 of the Act.

Processor has the same meaning as in section 3 of the Act.

Rollboard means an asbestos-containing product made of paper that is produced in a continuous sheet, is flexible, and is rolled to achieve a desired thickness. Asbestos rollboard consists of two sheets of asbestos paper laminated together. Major applications of this product include: office partitioning; garage paneling; linings for stoves and electric switch boxes; and fire-proofing agent for security boxes, safes, and files.

Specialty paper means an asbestos-containing product that is made of paper intended for use as filters for beverages or other fluids or as paper fill for cooling towers. Cooling tower fill consists of asbestos paper that is used as a cooling agent for liquids from industrial processes and air conditioning systems.

State has the same meaning as in section 3 of the Act.

Stock-on-hand means the products which are in the possession, direction, or control of a person and are intended for distribution in commerce.

United States has the same meaning as in section 3 of the Act.

[59 FR 33208, June 28, 1994]

§ 763.165 Manufacture and importation prohibitions.

(a) After August 27, 1990, no person shall manufacture or import the following asbestos-containing products, either for use in the United States or for export: flooring felt and new uses of asbestos.

(b) After August 26, 1996, no person shall manufacture or import the following asbestos-containing products, either for use in the United States or for export: commercial paper, corrugated paper, rollboard, and specialty paper.

(c) The import prohibitions of this subpart do not prohibit:

(1) The import into the customs territory of the United States of products imported solely for shipment outside the customs territory of the United States, unless further repackaging or processing of the product is performed in the United States; or

(2) Activities involving purchases or acquisitions of small quantities of products made outside the customs territory of the United States for personal use in the United States.

[59 FR 33209, June 28, 1994]

§ 763.167 Processing prohibitions.

(a) After August 27, 1990, no person shall process for any use, either in the United States or for export, any of the asbestos-containing products listed at § 763.165(a).

(b) After August 26, 1996, no person shall process for any use, either in the United States or for export, any of the asbestos-containing products listed at § 763.165(b).

[59 FR 33209, June 28, 1994]

§ 763.169 Distribution in commerce prohibitions.

(a) After August 25, 1992, no person shall distribute in commerce, either for use in the United States or for export, any of the asbestos-containing products listed at § 763.165(a).

(b) After August 25, 1997, no person shall distribute in commerce, either for use in the United States or for export, any of the asbestos-containing products listed at § 763.165(b).

(c) A manufacturer, importer, processor, or any other person who is subject to a ban on distribution in commerce in paragraph (a) or (b) of this section must, within 6 months of the effective date of the ban of a specific asbestos-containing product from distribution in commerce, dispose of all their remaining stock-on-hand of that product, by means that are in compliance with applicable local, State, and Federal restrictions which are current at that time.

[59 FR 33209, June 28, 1994]

§ 763.171 Labeling requirements.

(a) After August 27, 1990, manufacturers, importers, and processors of all asbestos-containing products that are identified in § 763.165(a) shall label the products as specified in this subpart at the time of manufacture, import, or processing. This requirement includes labeling all manufacturers', importers', and processors' stock-on-hand as of August 27, 1990.

(b) After August 25, 1995, manufacturers, importers, and processors of all asbestos-containing products that are identified in § 763.165(b), shall label the products as specified in this subpart at the time of manufacture, import, or processing. This requirement includes labeling all manufacturers', importers', and processors' stock-on-hand as of August 25, 1995.

(c) The label shall be placed directly on the visible exterior of the wrappings and packaging in which the product is placed for sale, shipment, or storage. If the product has more than one layer of external wrapping or packaging, the label must be attached to the innermost layer adjacent to the product. If the innermost layer of product wrapping or packaging does not have a visible exterior surface larger than 5 square inches, either a tag meeting the requirements of paragraph (d) of this section must be securely attached to the product's innermost layer of product wrapping or packaging, or a label must be attached to the next outer layer of product packaging or wrapping. Any products that are distributed in commerce to someone other than the end user, shipped, or stored without packaging or wrapping must be labeled or tagged directly on a visible exterior surface of the product as described in paragraph (d) of this section.

(d)

(1) Labels must be either printed directly on product packaging or in the form of a sticker or tag made of plastic, paper, metal, or other durable substances. Labels must be attached in such a manner that they cannot be removed without defacing or destroying them. Product labels shall appear as in paragraph (d)(2) of this section and consist of block letters and numerals of color that contrasts with the background of the label or tag. Labels shall be sufficiently durable to equal or exceed the life, including storage and disposal, of the product packaging or wrapping. The size of the label or tag must be at least 15.25 cm (6 inches) on each side. If the product packaging is too small to accommodate a label of this size, the label may be reduced in size proportionately to the size of the product packaging or wrapping down to a minimum 2.5 cm (1 inch) on each side if the product wrapping or packaging has a visible exterior surface larger than 5 square inches.

(2) Products subject to this subpart shall be labeled in English as follows:

> NOTICE
>
> This product contains *ASBESTOS.* The U.S. Environmental Protection Agency has banned the distribution in U.S. commerce of this product under section 6 of the Toxic Substances Control Act (15 U.S.C. 2605) as of (insert effective date of ban on distribution in commerce). Distribution of this product in commerce after this date and intentionally removing or tampering with this label are *violations of Federal law.*

(e) No one may intentionally remove, deface, cover, or otherwise obscure or tamper with a label or sticker that has been applied in compliance with this section, except when the product is used or disposed of.

[59 FR 33209, June 28, 1994]

§ 763.173 Exemptions.

(a) Persons who are subject to the prohibitions imposed by § 763.165, § 763.167, or § 763.169 may file an application for an exemption. Persons whose exemption applications are approved by the Agency may manufacture, import, process, or distribute in commerce the banned product as specified in the Agency's approval of the application. No applicant for an exemption may continue the banned activity that is the subject of an exemption application after the effective date of the ban unless the Agency has granted the exemption or the applicant receives an extension under paragraph (b)(4) or (5) of this section.

(b) Application filing dates.

(1) Applications for products affected by the prohibitions under §§ 763.165(a) and 763.167(a) may be submitted at any time and will be either granted or denied by EPA as soon as is feasible.

(2) Applications for products affected by the ban under § 763.169(a) may be submitted at any time and will be either granted or denied by EPA as soon as is feasible.

(3) Applications for products affected by the ban under §§ 763.165(b) and 763.167(b) may not be submitted prior to February 27, 1995. Complete applications received after that date, but before August 25, 1995, will be either granted or denied by the Agency prior to the effective date of the ban for the product. Applications received after August 25, 1995, will be either granted or denied by EPA as soon as is feasible.

(4) Applications for products affected by the ban under § 763.169(b) may not be submitted prior to February 26, 1996. Complete applications received after that date, but before August 26, 1996, will be either granted or denied by the Agency prior to the effective date of the ban for the product. Applications received after August 26, 1996, will be either granted or denied by EPA as soon as is feasible.

(5) The Agency will consider an application for an exemption from a ban under § 763.169 for a product at the same time the applicant submits an application for an exemption from a ban under § 763.165 or § 763.167 for that product. EPA will grant an exemption at that time from a ban under § 763.169 if the Agency determines it appropriate to do so.

(6) If the Agency denies an application less than 30 days before the effective date of a ban for a product, the applicant can continue the activity for 30 days after receipt of the denial from the Agency.

(7) If the Agency fails to meet the deadlines stated in paragraphs (b)(3) and (b)(4) of this section for granting or denying a complete application in instances in which the deadline is before the effective date of the ban to which the application applies, the applicant will be granted an extension of 1 year from the Agency's deadline date. During this extension period the applicant may continue the activity that is the subject of the exemption application. The Agency will either grant or deny the application during the extension period. The extension period will terminate either on the date the Agency grants the application or 30 days after the applicant receives the Agency's denial of the application. However, no extension will be granted if the Agency is scheduled to grant or deny an application at some date after the effective date of the ban, pursuant to the deadlines stated in paragraphs (b)(3) and (b)(4) of this section.

(c) Where to file. All applications must be submitted to the following location: TSCA Docket Receipts Office (7407), Office of Pollution Prevention and Toxics, U.S. Environmental Protection Agency, Rm E-G99, 1200 Pennsylvania Ave., NW., Washington, DC 20460, ATTENTION: Asbestos Exemption. For information regarding the submission of exemptions containing information claimed as confidential business information (CBI), see § 763.179.

(d) Content of application and criteria for decisionmaking.

(1) Content of application. Each application must contain the following:

(i) Name, address, and telephone number of the applicant.

(ii) Description of the manufacturing, import, processing, and/or distribution in commerce activity for which an exemption is requested, including a description of the asbestos-containing product to be manufactured, imported, processed, or distributed in commerce.

(iii) Identification of locations at which the exempted activity would take place.

(iv) Length of time requested for exemption (maximum length of an exemption is 4 years).

(v) Estimated amount of asbestos to be used in the activity that is the subject of the exemption application.

(vi) Data demonstrating the exposure level over the life cycle of the product that is the subject of the application.

(vii) Data concerning:

(A) The extent to which non-asbestos substitutes for the product that is the subject of the application fall significantly short in performance under necessary product standards or requirements, including laws or ordinances mandating product safety standards.

(B) The costs of non-asbestos substitutes relative to the costs of the asbestos-containing product and, in the case in which the product is a component of another product, the effect on the cost of the end use product of using the substitute component.

(C) The extent to which the product or use serves a high-valued use.

(viii) Evidence of demonstrable good faith attempts by the applicant to develop and use a non-asbestos substance or product which may be substituted for the asbestos-containing product or the asbestos in the product or use that is the subject to the application.

(ix) Evidence, in addition to that provided in the other information required with the application, showing that the continued manufacture, importation, processing, distribution in commerce, and use, as applicable, of the product will not present an unreasonable risk of injury to human health.

(2) Criteria for decision (existing products). After considering all the information provided by an applicant under paragraphs (d)(1) and (e) of this section, and any other information available to EPA, EPA will grant an exemption from the prohibitions in § 763.165, § 763.167, or § 763.169 for an applicant's asbestos-containing product only if EPA determines both of the following:

(i) The applicant has made good faith attempts to develop and use a non-asbestos substance or product which may be substituted for the asbestos-containing product or the asbestos in the product or use, and those attempts have failed to produce a substitute or a substitute that results in a product that can be economically produced.

(ii) Continued manufacturing, processing, distribution in commerce, and use, as applicable, of the product will not present an unreasonable risk of injury to human health.

(3) Criteria for decision (new products). Requests to develop and use an asbestos substance or product will be treated as a petition pursuant to section 21 of TSCA.

(e) The Agency reserves the right to request further information from an exemption applicant if necessary to complete the Agency's evaluation of an application.

(f) Upon receipt of a complete application, the Agency will issue a notice in the FEDERAL REGISTER announcing its receipt and invite public comments on the merits of the application.

(g) If the application does not include all of the information required in paragraph (d) of this section, the Agency will return it to the applicant as incomplete and any resubmission of the application will be considered a new application for purposes of the availability of any extension period. If the application is substantially inadequate to allow the Agency to make a reasoned judgment on any of the information

required in paragraph (d) of this section and the Agency chooses to request additional information from the applicant, the Agency may also determine that an extension period provided for in paragraph (b)(5) of this section is unavailable to the applicant.

(h) When denying an application, the Agency will notify the applicant by registered mail of its decision and rationale. Whenever possible, the Agency will send this letter prior to the appropriate ban. This letter will be considered a final Agency action for purposes of judicial review. A notice announcing the Agency's denial of the application will be published in the FEDERAL REGISTER.

(i) If the Agency proposes to approve an exemption, it will issue a notice in the FEDERAL REGISTER announcing this intent and invite public comments. If, after considering any timely comments received, the Agency approves an exemption, its decision will be published in the FEDERAL REGISTER. This notice will be considered a final Agency action for purposes of judicial review.

(j) The length of an exemption period will be specified by the agency when it approves the exemption. To extend an exemption period beyond the period stipulated by EPA, applicants must submit a new application to the Agency, following the application procedures described in this section. Applications may not be submitted prior to 15 months before the expiration of the exemption period, unless stated otherwise in the notice granting the exemption. Applications received between 15 months and 1 year before the end of the exemption period will be either granted or denied by the Agency before the end of the exemption period. Applications received after the date 1 year prior to the end of the exemption period will be either granted or denied by the Agency as soon as is feasible. Applicants may not continue the activity that is the subject of the renewal application after the date of the end of the exemption period.

[54 FR 29507, July 12, 1989; 54 FR 37531, Sept. 11, 1989, as amended at 54 FR 46898, Nov. 8, 1989; 59 FR 33210, June 28, 1994]

§ 763.175 Enforcement.

(a) Failure to comply with any provision of this subpart is a violation of section 15 of the Act (15 U.S.C. 2614).

(b) Failure or refusal to establish and maintain records, or to permit access to or copying of records as required by section 11 of the Act (15 U.S.C. 2610) is a violation of section 15 of the Act (15 U.S.C. 2614).

(c) Failure or refusal to permit entry or inspection as required by section 11 of the Act (15 U.S.C. 2610) is a violation of section 15 of the Act (15 U.S.C. 2614).

(d) Violators may be subject to the civil and criminal penalties in section 16 of the Act (15 U.S.C. 2615) for each violation.

(e) The Agency may seek to enjoin the manufacture, import, processing, or distribution in commerce of asbestos-containing products in violation of this subpart, or act to seize any asbestos-containing products manufactured, imported, processed, or distributed in commerce in violation of this subpart, or take any other actions under the authority of section 7 or 17 of the Act (15 U.S.C. 2606 or 2616) that are appropriate.

§ 763.176 Inspections.

The Agency will conduct inspections under section 11 of the Act (15 U.S.C. 2610) to ensure compliance with this subpart.

§ 763.178 Recordkeeping.

(a) ***Inventory.***

(1) Each person who is subject to the prohibitions imposed by §§ 763.165 and 763.167 must perform an inventory of the stock-on-hand of each banned product as of the effective date of the ban for that product for the applicable activity.

(2) The inventory shall be in writing and shall include the type of product, the number of product units currently in the stock-on-hand of the person performing the inventory, and the location of the stock.

(3) Results of the inventory for a banned product must be maintained by the person for 3 years after the effective date of the § 763.165 or § 763.167 ban on the product.

(b) ***Records.***

(1) Each person whose activities are subject to the bans imposed by §§ 763.165, 763.167, and 763.169 for a product must, between the effective date of the § 763.165 or § 763.167 ban on the product and the § 763.169 ban on the product, keep records of all commercial transactions regarding the product, including the dates of purchases and sales and the quantities purchased or sold. These records must be maintained for 3 years after the effective date of the § 763.169 ban for the product.

(2) Each person who is subject to the requirements of § 763.171 must, for each product required to be labeled, maintain a copy of the label used in compliance with § 763.171. These records must be maintained for 3 years after the effective date of the ban on distribution in commerce for the product for which the § 763.171 requirements apply.

[54 FR 29507, July 12, 1989, as amended at 54 FR 46898, Nov. 8, 1989; 58 FR 34205, June 23, 1993]

§ 763.179 Confidential business information claims.

(a) Applicants for exemptions under § 763.173 may assert a Confidential Business Information (CBI) claim for information in an exemption application or supplement submitted to the Agency under this subpart only if the claim is asserted in accordance with this section, and release of the information would reveal trade secrets or confidential commercial or financial information, as provided in section 14(a) of the Act. Information covered by a CBI claim will be treated in accordance with the procedures set forth in 40 CFR part 2, subpart B. The Agency will place all information not claimed as CBI in the manner described in this section in a public file without further notice to the applicant.

(b) Applicants may assert CBI claims only at the time they submit a completed exemption application and only in the specified manner. If no such claim accompanies the information when it is received by the Agency, the information may be made available to the public without further notice to the applicant. Submitters that claim information as business confidential must do so by writing the word “Confidential” at the top of the page on which the information appears and by underlining, circling, or placing brackets ([ ]) around the information claimed CBI.

(c) Applicants who assert a CBI claim for submitted information must provide the Agency with two copies of their exemption application. The first copy must be complete and contain all information being claimed as CBI. The second copy must contain only information not claimed as CBI. The Agency will place the second copy of the submission in a public file. Failure to furnish a second copy of the submission when information is claimed as CBI in the first copy will be considered a presumptive waiver of the claim of confidentiality. The Agency will notify the applicant by certified mail that a finding of a presumptive waiver

of the claim of confidentiality has been made. The applicant has 30 days from the date of receipt of notification to submit the required second copy. Failure to submit the second copy will cause the Agency to place the first copy in a public file.

(d) Applicants must substantiate all claims of CBI at the time the applicant asserts the claim, i.e., when the exemption application or supplement is submitted, by responding to the questions in paragraph (e) of this section. Failure to provide substantiation of a claim at the time the applicant submits the application will result in a waiver of the CBI claim, and the information may be disclosed to the public without further notice to the applicant.

(e) Applicants who assert any CBI claims must substantiate all claims by providing detailed responses to the following:

(1) Is this information subject to a patent or patent application in the United States or elsewhere? If so, why is confidentiality necessary?

(2) For what period do you assert a claim of confidentiality? If the claim is to extend until a certain event or point in time, please indicate that event or time period. Explain why such information should remain confidential until such point.

(3) Has the information that you are claiming as confidential been disclosed to persons outside of your company? Will it be disclosed to such persons in the future? If so, what restrictions, if any, apply to use or further disclosure of the information?

(4) Briefly describe measures taken by your company to guard against undesired disclosure of the information you are claiming as confidential to others.

(5) Does the information claimed as confidential appear or is it referred to in advertising or promotional materials for the product or the resulting end product, safety data sheets or other similar materials for the product or the resulting end product, professional or trade publications, or any other media available to the public or to your competitors? If you answered yes, indicate where the information appears.

(6) If the Agency disclosed the information you are claiming as confidential to the public, how difficult would it be for the competitor to enter the market for your product? Consider in your answer such constraints as capital and marketing cost, specialized technical expertise, or unusual processes.

(7) Has the Agency, another Federal agency, or a Federal court made any confidentiality determination regarding this information? If so, provide copies of such determinations.

(8) How would your company's competitive position be harmed if the Agency disclosed this information? Why should such harm be considered substantial? Describe the causal relationship between the disclosure and harm.

(9) In light of section 14(b) of TSCA, if you have claimed information from a health and safety study as confidential, do you assert that disclosure of this information would disclose a process used in the manufacturing or processing of a product or information unrelated to the effects of asbestos on human health and the environment? If your answer is yes, explain.

Title 40 - Protection of Environment
Chapter I - Environmental Protection Agency
Subchapter R - Toxic Substances Control Act
Part 763 - Asbestos
Subpart E - Asbestos-Containing Materials in Schools

Source: 52 FR 41846, Oct. 30, 1987, unless otherwise noted.
Authority: 15 U.S.C. 2605, 2607(c), 2643, and 2646.

Appendix C to Subpart E of Part 763 - Asbestos Model Accreditation Plan

I. Asbestos Model Accreditation Plan for States

The Asbestos Model Accreditation Plan (MAP) for States has eight components:

(A) Definitions

(B) Initial Training

(C) Examinations

(D) Continuing Education

(E) Qualifications

(F) Recordkeeping Requirements for Training Providers

(G) Deaccreditation

(H) Reciprocity

(I) Electronic reporting

A. Definitions

For purposes of Appendix C:

1. ***"Friable asbestos-containing material (ACM)"*** means any material containing more than one percent asbestos which has been applied on ceilings, walls, structural members, piping, duct work, or any other part of a building, which when dry, may be crumbled, pulverized, or reduced to powder by hand pressure. The term includes non-friable asbestos-containing 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.

2. ***"Friable asbestos-containing building material (ACBM)"*** means any friable ACM that is in or on interior structural members or other parts of a school or public and commercial building.

3. ***"Inspection"*** means an activity undertaken in a school building, or a public and commercial building, to determine the presence or location, or to assess the condition of, friable or non-friable asbestos-containing building material (ACBM) or suspected ACBM, whether by visual or physical examination, or by collecting samples of such material. This term includes reinspections of friable and non-friable known or assumed ACBM which has been previously identified. The term does not include the following:

   a. Periodic surveillance of the type described in 40 CFR 763.92(b) solely for the purpose of recording or reporting a change in the condition of known or assumed ACBM;

   b. Inspections performed by employees or agents of Federal, State, or local government solely for the purpose of determining compliance with applicable statutes or regulations; or

   c. visual inspections of the type described in 40 CFR 763.90(i) solely for the purpose of determining completion of response actions.

4. ***"Major fiber release episode"*** means any uncontrolled or unintentional disturbance of ACBM, resulting in a visible emission, which involves the falling or dislodging of more than 3 square or linear feet of friable ACBM.

5. ***"Minor fiber release episode"*** means any uncontrolled or unintentional disturbance of ACBM, resulting in a visible emission, which involves the falling or dislodging of 3 square or linear feet or less of friable ACBM.

6. ***"Public and commercial building"*** means the interior space of any building which is not a school building, except that the term does not include any residential apartment building of fewer than 10 units or detached single-family homes. The term includes, but is not limited to: industrial and office buildings, residential apartment buildings and condominiums of 10 or more dwelling units, government-owned buildings, colleges, museums, airports, hospitals, churches, preschools, stores, warehouses and factories. Interior space includes exterior hallways connecting buildings, porticos, and mechanical systems used to condition interior space.

7. ***"Response action"*** means a method, including removal, encapsulation, enclosure, repair, and operation and maintenance, that protects human health and the environment from friable ACBM.

8. ***"Small-scale, short-duration activities (SSSD)"*** are tasks such as, but not limited to:

   a. Removal of asbestos-containing insulation on pipes.

   b. Removal of small quantities of asbestos-containing insulation on beams or above ceilings.

   c. Replacement of an asbestos-containing gasket on a valve.

   d. Installation or removal of a small section of drywall.

   e. Installation of electrical conduits through or proximate to asbestos-containing materials.

   SSSD can be further defined by the following considerations:

f. Removal of small quantities of ACM only if required in the performance of another maintenance activity not intended as asbestos abatement.

g. Removal of asbestos-containing thermal system insulation not to exceed amounts greater than those which can be contained in a single glove bag.

h. Minor repairs to damaged thermal system insulation which do not require removal.

i. Repairs to a piece of asbestos-containing wallboard.

j. 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.

B. Initial Training

Training requirements for purposes of accreditation are specified both in terms of required subjects of instruction and in terms of length of training. Each initial training course has a prescribed curriculum and number of days of training. One day of training equals 8 hours, including breaks and lunch. Course instruction must be provided by EPA or State-approved instructors. EPA or State instructor approval shall be based upon a review of the instructor's academic credentials and/or field experience in asbestos abatement.

Beyond the initial training requirements, individual States may wish to consider requiring additional days of training for purposes of supplementing hands-on activities or for reviewing relevant state regulations. States also may wish to consider the relative merits of a worker apprenticeship program. Further, they might consider more stringent minimum qualification standards for the approval of training instructors. EPA recommends that the enrollment in any given course be limited to 25 students so that adequate opportunities exist for individual hands-on experience.

States have the option to provide initial training directly or approve other entities to offer training. The following requirements are for the initial training of persons required to have accreditation under TSCA Title II.

Training requirements for each of the five accredited disciplines are outlined below. Persons in each discipline perform a different job function and distinct role. Inspectors identify and assess the condition of ACBM, or suspect ACBM. Management planners use data gathered by inspectors to assess the degree of hazard posed by ACBM in schools to determine the scope and timing of appropriate response actions needed for schools. Project designers determine how asbestos abatement work should be conducted. Lastly, workers and contractor/supervisors carry out and oversee abatement work. In addition, a recommended training curriculum is also presented for a sixth discipline, which is not federally-accredited, that of “Project Monitor.” Each accredited discipline and training curriculum is separate and distinct from the others. A person seeking accreditation in any of the five accredited MAP disciplines cannot attend two or more courses concurrently, but may attend such courses sequentially.

In several instances, initial training courses for a specific discipline (e.g., workers, inspectors) require hands-on training. For asbestos abatement contractor/supervisors and workers, hands-on training should include working with asbestos-substitute materials, fitting and using respirators, use of glovebags, donning protective clothing, and constructing a decontamination unit as well as other abatement work activities.

1. Workers

A person must be accredited as a worker to carry out any of the following activities with respect to friable ACBM in a school or public and commercial building: (1) A response action other than a SSSD activity, (2) a maintenance activity that disturbs friable ACBM other than a SSSD activity, or (3) a response action for a major fiber release episode. All persons seeking accreditation as asbestos abatement workers shall complete at least a 4-day training course as outlined below. The 4-day worker training course shall include lectures, demonstrations, at least 14 hours of hands-on training, individual respirator fit testing, course review, and an examination. Hands-on training must permit workers to have actual experience performing tasks associated with asbestos abatement. A person who is otherwise accredited as a contractor/supervisor may perform in the role of a worker without possessing separate accreditation as a worker.

Because of cultural diversity associated with the asbestos workforce, EPA recommends that States adopt specific standards for the approval of foreign language courses for abatement workers. EPA further recommends the use of audio-visual materials to complement lectures, where appropriate.

The training course shall adequately address the following topics:

(a) ***Physical characteristics of asbestos.*** Identification of asbestos, aerodynamic characteristics, typical uses, and physical appearance, and a summary of abatement control options.

(b) ***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 cancers of other organs.

(c) ***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 facepiece-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.

(d) ***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.

(e) ***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.

(f) ***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.

(g) ***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.

(h) ***Air monitoring.*** Procedures to determine airborne concentrations of asbestos fibers, focusing on how personal air sampling is performed and the reasons for it.

(i) ***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.

(j) ***Establishment of respiratory protection programs.***

(k) ***Course review.*** A review of key aspects of the training course.

2. Contractor/Supervisors

A person must be accredited as a contractor/supervisor to supervise any of the following activities with respect to friable ACBM in a school or public and commercial building: (1) A response action other than a SSSD activity, (2) a maintenance activity that disturbs friable ACBM other than a SSSD activity, or (3) a response action for a major fiber release episode. All persons seeking accreditation as asbestos abatement contractor/supervisors shall complete at least a 5-day training course as outlined below. The training course must include lectures, demonstrations, at least 14 hours of hands-on training, individual respirator fit testing, course review, and a written examination. Hands-on training must permit supervisors to have actual experience performing tasks associated with asbestos abatement.

EPA recommends the use of audiovisual materials to complement lectures, where appropriate.

Asbestos abatement supervisors include those persons who provide supervision and direction to workers performing response actions. Supervisors may include those individuals with the position title of foreman, working foreman, or leadman pursuant to collective bargaining agreements. At least one supervisor is required to be at the worksite at all times while response actions are being conducted. Asbestos workers must have access to accredited supervisors throughout the duration of the project.

The contractor/supervisor training course shall adequately address the following topics:

(a) ***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.

(b) ***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.

(c) ***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 facepiece-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.

(d) ***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, enclosure, 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.

(e) ***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.

(f) ***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.

(g) ***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.

(h) ***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 analyses be performed by laboratories accredited by the National Institute of Standards and Technology's (NIST) National Voluntary Laboratory Accreditation Program (NVLAP).

(i) ***Relevant Federal, State, and local regulatory requirements, procedures, and standards, including:***

(i) Requirements of TSCA Title II.

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

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

(iv) OSHA Asbestos Construction Standard (29 CFR 1926.58).

(v) EPA Worker Protection Rule, (40 CFR part 763, subpart G).

(j) ***Respiratory Protection Programs and Medical Monitoring Programs.***

(k) ***Insurance and liability issues.*** Contractor issues; worker's compensation coverage and exclusions; third-party liabilities and defenses; insurance coverage and exclusions.

(l) ***Recordkeeping for asbestos abatement projects.*** Records required by Federal, State, and local regulations; records recommended for legal and insurance purposes.

(m) ***Supervisory techniques for asbestos abatement activities.*** Supervisory practices to enforce and reinforce the required work practices and discourage unsafe work practices.

(n) ***Contract specifications.*** Discussions of key elements that are included in contract specifications.

(o) ***Course review.*** A review of key aspects of the training course.

3. Inspector

All persons who inspect for ACBM in schools or public and commercial buildings must be accredited. All persons seeking accreditation as an inspector shall complete at least a 3-day training course as outlined below. The course shall include lectures, demonstrations, 4 hours of hands-on training, individual respirator fit-testing, course review, and a written examination.

EPA recommends the use of audiovisual materials to complement lectures, where appropriate. Hands-on training should include conducting a simulated building walk-through inspection and respirator fit testing. The inspector training course shall adequately address the following topics:

(a) ***Background information on asbestos.*** Identification of asbestos, and examples and discussion of the uses and locations of asbestos in buildings; physical appearance of asbestos.

(b) ***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 cancers of other organs.

(c) ***Functions/qualifications and role of inspectors.*** Discussions of prior experience and qualifications for inspectors and management planners; discussions of the functions of an accredited inspector as compared to those of an accredited management planner; discussion of inspection process including inventory of ACM and physical assessment.

(d) ***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.

(e) ***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.

(f) ***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.

(g) ***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.

(h) ***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.

(i) ***Bulk sampling/documentation of asbestos.*** Detailed discussion of the "Simplified Sampling Scheme for Friable Surfacing Materials (EPA 560/5-85-030a October 1985)"; 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.

(j) ***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 facepiece-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.

(k) ***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 TSCA Title II, section 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 conducted for accreditation.

(l) ***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 1926.58); OSHA respirator requirements (29 CFR 1910.134); the Asbestos-Containing Materials in School 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 nonpublic schools or commercial or public buildings.

(m) ***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.

(n) ***Course review.*** A review of key aspects of the training course.

4. Management Planner

All persons who prepare management plans for schools must be accredited. All persons seeking accreditation as management planners shall complete a 3-day inspector training course as outlined above and a 2-day management planner training course. Possession of current and valid inspector accreditation shall be a prerequisite for admission to the management planner training course. The management planner course shall include lectures, demonstrations, course review, and a written examination.

EPA recommends the use of audiovisual materials to complement lectures, where appropriate.

TSCA Title II does not require accreditation for persons performing the management planner role in public and commercial buildings. Nevertheless, such persons may find this training and accreditation helpful in preparing them to design or administer asbestos operations and maintenance programs for public and commercial buildings.

The management planner training course shall adequately address the following topics:

(a) ***Course overview.*** The role and responsibilities of the management planner; operations and maintenance programs; setting work priorities; protection of building occupants.

(b) ***Evaluation/interpretation of survey results.*** Review of TSCA Title II requirements for inspection and management plans for school buildings as given in section 203(i)(1) of TSCA Title II; interpretation of field data and laboratory results; comparison of field inspector's data sheet with laboratory results and site survey.

(c) ***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.

(d) ***Legal implications.*** Liability; insurance issues specific to planners; liabilities associated with interim control measures, in-house maintenance, repair, and removal; use of results from previously performed inspections.

(e) ***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.

(f) ***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.

(g) ***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 renovation in areas with ACM; boiler room maintenance; disposal of ACM; in-house procedures for ACM - bridging and penetrating encapsulants; 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).

(h) ***Regulatory review.*** Focusing on the OSHA Asbestos Construction Standard found at 29 CFR 1926.58; 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; TSCA Title II; applicable State regulations.

(i) ***Recordkeeping for the management planner.*** Use of field inspector's data sheet along with laboratory results; on-going 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.

(j) ***Assembling and submitting the management plan.*** Plan requirements for schools in TSCA Title II section 203(i)(1); the management plan as a planning tool.

(k) ***Financing abatement actions.*** Economic analysis and cost estimates; development of cost estimates; present costs of abatement versus future operation and maintenance costs; Asbestos School Hazard Abatement Act grants and loans.

(l) ***Course review.*** A review of key aspects of the training course.

5. Project Designer

A person must be accredited as a project designer to design any of the following activities with respect to friable ACBM in a school or public and commercial building: (1) A response action other than a SSSD maintenance activity, (2) a maintenance activity that disturbs friable ACBM other than a SSSD maintenance activity, or (3) a response action for a major fiber release episode. All persons seeking accreditation as a project designer shall complete at least a minimum 3-day training course as outlined below. The project designer course shall include lectures, demonstrations, a field trip, course review and a written examination.

EPA recommends the use of audiovisual materials to complement lectures, where appropriate.

The abatement project designer training course shall adequately address the following topics:

(a) ***Background information on asbestos.*** Identification of asbestos; examples and discussion of the uses and locations of asbestos in buildings; physical appearance of asbestos.

(b) ***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 of asbestos-related diseases; a discussion of the relationship between asbestos exposure and asbestosis, lung cancer, mesothelioma, and cancers of other organs.

(c) ***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 1926.58).

(d) ***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.

(e) ***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.

(f) ***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 facepiece-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.

(g) ***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.

(h) ***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; aggressive air movement and negative-pressure exhaust ventilation as a clean-up method.

(i) ***Designing abatement solutions.*** Discussions of removal, enclosure, and encapsulation methods; asbestos waste disposal.

(j) ***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.

EPA recommends the use of TEM for analysis of final air clearance samples. These samples should be analyzed by laboratories accredited under the NIST NVLAP.

(k) ***Budgeting/cost estimating.*** Development of cost estimates; present costs of abatement versus future operation and maintenance costs; setting priorities for abatement jobs to reduce costs.

(l) ***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; replacement of ACM with non-asbestos substitutes.

(m) ***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; particular problems related to abatement drawings.

(n) ***Contract preparation and administration.***

(o) ***Legal/liabilities/defenses.*** Insurance considerations; bonding; hold-harmless clauses; use of abatement contractor's liability insurance; claims made versus occurrence policies.

(p) ***Replacement.*** Replacement of asbestos with asbestos-free substitutes.

(q) ***Role of other consultants.*** Development of technical specification sections by industrial hygienists or engineers; the multi-disciplinary team approach to abatement design.

(r) ***Occupied buildings.*** Special design procedures required in occupied buildings; education of occupants; extra monitoring recommendations; staging of work to minimize occupant exposure; scheduling of renovation to minimize exposure.

(s) ***Relevant Federal, State, and local regulatory requirements, procedures and standards, including, but not limited to:***

(i) Requirements of TSCA Title II.

(ii) National Emission Standards for Hazardous Air Pollutants, (40 CFR part 61) subparts A (General Provisions) and M (National Emission Standard for Asbestos).

(iii) OSHA Respirator Standard found at 29 CFR 1910.134.

(iv) EPA Worker Protection Rule found at 40 CFR part 763, subpart G.

(v) OSHA Asbestos Construction Standard found at 29 CFR 1926.58.

(vi) OSHA Hazard Communication Standard found at 29 CFR 1926.59.

(t) ***Course review.*** A review of key aspects of the training course.

6. Project Monitor

EPA recommends that States adopt training and accreditation requirements for persons seeking to perform work as project monitors. Project monitors observe abatement activities performed by contractors and generally serve as a building owner's representative to ensure that abatement work is completed according to specification and in compliance with all relevant statutes and regulations. They may also perform the vital role of air monitoring for purposes of determining final clearance. EPA recommends that a State seeking to accredit individuals as project monitors consider adopting a minimum 5-day training course covering the topics outlined below. The course outlined below consists of lectures and demonstrations, at least 6 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).

EPA recommends that the project monitor training course adequately address the following topics:

(a) ***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.

(b) ***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.

(c) ***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, subpart G. Overview of pertinent OSHA regulations, including: Construction Industry Standard for Asbestos, 29 CFR 1926.58; Respirator Standard, 29 CFR 1910.134; and the Hazard Communication Standard, 29 CFR 1926.59. Applicable State and local asbestos regulations; regulatory interrelationships.

(d) ***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; renovations and the effect of asbestos abatement on building systems.

(e) ***Asbestos abatement contracts, specifications, and drawings.*** Basic provisions of the contract; relationships between principle parties, establishing chain of command; types of specifications, including means and methods, performance, and proprietary and nonproprietary; reading and interpreting records and abatement drawings; discussion of change orders; common enforcement responsibilities and authority of project monitor.

(f) ***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; contingency planning for emergency response.

(g) ***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; best available technology.

(h) ***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, determining proper backup air volumes.

(i) ***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, sampling in occupied buildings (barrier monitoring).

(j) ***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, hazardous materials on abatement projects.

(k) ***Conducting visual inspections.*** Inspections during abatement, visual inspections using the ASTM E1368 document; conducting inspections for completeness of removal; discussion of "how clean is clean?"

(l) ***Legal responsibilities and liabilities of project monitors.*** Specification enforcement capabilities; regulatory enforcement; licensing; powers delegated to project monitors through contract documents.

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

(n) ***Workshops (6 hours spread over 3 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 cleanliness.

C. Examinations

1. Each State shall administer a closed book examination or designate other entities such as State-approved providers of training courses to administer the closed-book examination to persons seeking accreditation who have completed an initial training course. Demonstration testing may also be included as part of the examination. A person seeking initial accreditation in a specific discipline must pass the examination for that discipline in order to receive accreditation. For example, a person seeking accreditation as an abatement project designer must pass the State's examination for abatement project designer.

States may develop their own examinations, have providers of training courses develop examinations, or use standardized examinations developed for purposes of accreditation under TSCA Title II. In addition, States may supplement standardized examinations with questions about State regulations. States may obtain commercially developed standardized examinations, develop standardized examinations independently, or do so in cooperation with other States, or with commercial or non-profit providers on a regional or

national basis. EPA recommends the use of standardized, scientifically-validated testing instruments, which may be beneficial in terms of both promoting competency and in fostering accreditation reciprocity between States.

Each examination shall adequately cover the topics included in the training course for that discipline. Each person who completes a training course, passes the required examination, and fulfills whatever other requirements the State imposes must receive an accreditation certificate in a specific discipline. Whether a State directly issues accreditation certificates, or authorizes training providers to issue accreditation certificates, each certificate issued to an accredited person must contain the following minimum information:

a. A unique certificate number

b. Name of accredited person

c. Discipline of the training course completed.

d. Dates of the training course.

e. Date of the examination.

f. An expiration date of 1 year after the date upon which the person successfully completed the course and examination.

g. The name, address, and telephone number of the training provider that issued the certificate.

h. A statement that the person receiving the certificate has completed the requisite training for asbestos accreditation under TSCA Title II.

States or training providers who reaccredit persons based upon completion of required refresher training must also provide accreditation certificates with all of the above information, except the examination date may be omitted if a State does not require a refresher examination for reaccreditation.

Where a State licenses accredited persons but has authorized training providers to issue accreditation certificates, the State may issue licenses in the form of photo-identification cards. Where this applies, EPA recommends that the State licenses should include all of the same information required for the accreditation certificates. A State may also choose to issue photo-identification cards in addition to the required accreditation certificates.

Accredited persons must have their initial and current accreditation certificates at the location where they are conducting work.

2. The following are the requirements for examination in each discipline:

a. Worker:

i. 50 multiple-choice questions

ii. Passing score: 70 percent correct

b. Contractor/Supervisor:

i. 100 multiple-choice questions

ii. Passing score: 70 percent correct

c. Inspector:

i. 50 Multiple-choice questions

ii. Passing score: 70 percent correct

d. Management Planner:

i. 50 Multiple-choice questions

ii. Passing score: 70 percent correct

e. Project Designer:

i. 100 multiple-choice questions

ii. Passing score: 70 percent correct

D. Continuing Education

For all disciplines, a State's accreditation program shall include annual refresher training as a requirement for reaccreditation as indicated below:

1. Workers: One full day of refresher training.
2. Contractor/Supervisors: One full day of refresher training.
3. Inspectors: One half-day of refresher training.
4. Management Planners: One half-day of inspector refresher training and one half-day of refresher training for management planners.
5. Project Designers: One full day 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 State. After completing the annual refresher course, persons shall have their accreditation extended for an additional year from the date of the refresher course. A State may consider requiring persons to pass reaccreditation examinations at specific intervals (for example, every 3 years).

EPA recommends that States formally establish a 12-month grace period to enable formerly accredited persons with expired certificates to complete refresher training and have their accreditation status reinstated without having to re-take the initial training course.

E. Qualifications

In addition to requiring training and an examination, a State may require candidates for accreditation to meet other qualification and/or experience standards that the State considers appropriate for some or all disciplines. States may choose to consider requiring qualifications similar to the examples outlined below for inspectors, management planners and project designers. States may modify these examples as appropriate. In addition, States may want to include some requirements based on experience in performing a task directly as a part of a job or in an apprenticeship role. They may also wish to consider additional criteria for the approval of training course instructors beyond those prescribed by EPA.

1. Inspectors: Qualifications - possess a high school diploma. States may want to require an Associate's Degree in specific fields (e.g., environmental or physical sciences).
2. Management Planners: Qualifications - Registered architect, engineer, or certified industrial hygienist or related scientific field.
3. Project Designers: Qualifications - registered architect, engineer, or certified industrial hygienist.
4. Asbestos Training Course Instructor: Qualifications - academic credentials and/or field experience in asbestos abatement.

   EPA recommends that States prescribe minimum qualification standards for training instructors employed by training providers.

F. Recordkeeping Requirements for Training Providers

All approved providers of accredited asbestos training courses must comply with the following minimum recordkeeping requirements.

1. Training course materials. A training provider must retain copies of all instructional materials used in the delivery of the classroom training such as student manuals, instructor notebooks and handouts.
2. Instructor qualifications. A training provider must retain copies of all instructors' resumes, and the documents approving each instructor issued by either EPA or a State. Instructors must be approved by either EPA or a State before teaching courses for accreditation purposes. A training provider must notify EPA or the State, as appropriate, in advance whenever it changes course instructors. Records must accurately identify the instructors that taught each particular course for each date that a course is offered.
3. Examinations. A training provider must document that each person who receives an accreditation certificate for an initial training course has achieved a passing score on the examination. These records must clearly indicate the date upon which the exam was administered, the training course and discipline for which the exam was given, the name of the person who proctored the exam, a copy of the exam, and the name and test score of each person taking the exam. The topic and dates of the training course must correspond to those listed on that person's accreditation certificate. States may choose to apply these same requirements to examinations for refresher training courses.

4. Accreditation certificates. The training providers or States, whichever issues the accreditation certificate, shall maintain records that document the names of all persons who have been awarded certificates, their certificate numbers, the disciplines for which accreditation was conferred, training and expiration dates, and the training location. The training provider or State shall maintain the records in a manner that allows verification by telephone of the required information.

5. Verification of certificate information. EPA recommends that training providers of refresher training courses confirm that their students possess valid accreditation before granting course admission. EPA further recommends that training providers offering the initial management planner training course verify that students have met the prerequisite of possessing valid inspector accreditation at the time of course admission.

6. Records retention and access.

(a) The training provider shall maintain all required records for a minimum of 3 years. The training provider, however, may find it advantageous to retain these records for a longer period of time.

(b) The training provider must allow reasonable access to all of the records required by the MAP, and to any other records which may be required by States for the approval of asbestos training providers or the accreditation of asbestos training courses, to both EPA and to State Agencies, on request. EPA encourages training providers to make this information equally accessible to the general public.

(c) If a training provider ceases to conduct training, the training provider shall notify the approving government body (EPA or the State) and give it the opportunity to take possession of that providers asbestos training records.

G. Deaccreditation

1. States must establish criteria and procedures for deaccrediting persons accredited as workers, contractor/supervisors, inspectors, management planners, and project designers. States must follow their own administrative procedures in pursuing deaccreditation actions. At a minimum, the criteria shall include:

(a) Performing work requiring accreditation at a job site without being in physical possession of initial and current accreditation certificates;

(b) Permitting the duplication or use of one's own accreditation certificate by another;

(c) Performing work for which accreditation has not been received; or

(d) Obtaining accreditation from a training provider that does not have approval to offer training for the particular discipline from either EPA or from a State that has a contractor accreditation plan at least as stringent as the EPA MAP.

EPA may directly pursue deaccreditation actions without reliance on State deaccreditation or enforcement authority or actions. In addition to the above-listed situations, the Administrator may suspend or revoke the accreditation of persons who have been subject to a final order imposing a civil penalty or convicted under

section 16 of TSCA, 15 U.S.C. 2615 or 2647, for violations of 40 CFR part 763, or section 113 of the Clean Air Act, 42 U.S.C. 7413, for violations of 40 CFR part 61, subpart M.

2. Any person who performs asbestos work requiring accreditation under section 206(a) of TSCA, 15 U.S.C. 2646(a), without such accreditation is in violation of TSCA. The following persons are not accredited for purposes of section 206(a) of TSCA:

(a) Any person who obtains accreditation through fraudulent representation of training or examination documents;

(b) Any person who obtains training documentation through fraudulent means;

(c) Any person who gains admission to and completes refresher training through fraudulent representation of initial or previous refresher training documentation; or

(d) Any person who obtains accreditation through fraudulent representation of accreditation requirements such as education, training, professional registration, or experience.

H. Reciprocity

EPA recommends that each State establish reciprocal arrangements with other States that have established accreditation programs that meet or exceed the requirements of the MAP. Such arrangements might address cooperation in licensing determinations, the review and approval of training programs and/or instructors, candidate testing and exam administration, curriculum development, policy formulation, compliance monitoring, and the exchange of information and data. The benefits to be derived from these arrangements include a potential cost-savings from the reduction of duplicative activity and the attainment of a more professional accredited workforce as States are able to refine and improve the effectiveness of their programs based upon the experience and methods of other States.

I. Electronic Reporting

States that choose to receive electronic documents must include, at a minimum, the requirements of 40 CFR Part 3 - (Electronic reporting) in their programs.

II. EPA Approval Process for State Accreditation Programs

A. States may seek approval for a single discipline or all disciplines as specified in the MAP. For example, a State that currently only requires worker accreditation may receive EPA approval for that discipline alone. EPA encourages States that currently do not have accreditation requirements for all disciplines required under section 206(b)(2) of TSCA, 15 U.S.C. 2646(b)(2), to seek EPA approval for those disciplines the State does accredit. As States establish accreditation requirements for the remaining disciplines, the requested information outlined below should be submitted to EPA as soon as possible. Any State that had an accreditation program approved by EPA under an earlier version of the MAP may follow the same procedures to obtain EPA approval of their accreditation program under this MAP.

B. Partial approval of a State Program for the accreditation of one or more disciplines does not mean that the State is in full compliance with TSCA where the deadline for that State to have adopted a State Plan no less stringent than the MAP has already passed. State Programs which are at least as stringent as the MAP for one or more of the accredited disciplines may, however, accredit persons in those disciplines only.

C. States seeking EPA approval or reapproval of accreditation programs shall submit the following information to the Regional Asbestos Coordinator at their EPA Regional office:

1. A copy of the legislation establishing or upgrading the State's accreditation program (if applicable).

2. A copy of the State's accreditation regulations or revised regulations.

3. A letter to the Regional Asbestos Coordinator that clearly indicates how the State meets the program requirements of this MAP. Addresses for each of the Regional Asbestos Coordinators are shown below:

EPA, Region 1, Asbestos Coordinator, 5 Post Office Square - Suite 100 (05-4), Boston, MA 02109-3912, (617) 918-1563.

EPA, Region II, (MS-500), Asbestos Coordinator, 2890 Woodbridge Ave., Edison, NJ 08837-3679, (908) 321-6671.

EPA, Region III, (3AT-33), Asbestos Coordinator, 841 Chestnut Bldg., Philadelphia, PA 19107, (215) 597-3160.

EPA, Region IV, Asbestos Coordinator, 345 Courtland St., N.E., Atlanta, GA 30365, (404) 347-5014.

EPA, Region V, (SP-14J), Asbestos Coordinator, 77 W. Jackson Blvd., Chicago, IL 60604-3590, (312) 886-6003.

EPA, Region VI, (ECD), Asbestos Coordinator, 1201 Elm Street, Suite 500, Dallas, TX 75270, (214) 655-2760.

EPA, Region VII, (WWPD/TOPE), Asbestos Coordinator, U.S. Environmental Protection Agency, 11201 Renner Boulevard, Lenexa, Kansas 66219. (800) 223-0425 or (913) 551-7122.

EPA, Region VIII, (8AT-TS), Asbestos Coordinator, 1 Denver Place, Suite 500 999 - 18th St., Denver, CO 80202-2405, (303) 293-1442.

EPA, Region IX, Asbestos NESHAPs Contact, Air Division (A-5), 75 Hawthorne Street, San Francisco, CA 94105, (415) 972-3989.

EPA, Region X, (AT-083), Asbestos Coordinator, 1200 Sixth Ave., Seattle, WA 98101, (206) 553-4762.

EPA maintains a listing of all those States that have applied for and received EPA approval for having accreditation requirements that are at least as stringent as the MAP for one or more disciplines. Any training courses approved by an EPA-approved State Program are considered to be EPA-approved for purposes of accreditation.

III. Approval of Training Courses

Individuals or groups wishing to sponsor training courses for disciplines required to be accredited under section 206(b)(1)(A) of TSCA, 15 U.S.C. 2646(b)(1)(A), may apply for approval from States that have accreditation program requirements that are at least as stringent as this MAP. For a course to receive approval, it must meet the requirements for the course as outlined in this MAP, and any other requirements imposed by the State from which approval is being sought. Courses that have been approved by a State with an accreditation program at least as stringent as this MAP are approved under section 206(a) of TSCA, 15 U.S.C. 2646(a), for that particular State, and also for any other State that does not have an accreditation program as stringent as this MAP.

A. Initial Training Course Approval

A training provider must submit the following minimum information to a State as part of its application for the approval of each training course:

1. The course provider's name, address, and telephone number.
2. A list of any other States that currently approve the training course.
3. The course curriculum.
4. A letter from the provider of the training course that clearly indicates how the course meets the MAP requirements for:
    a. Length of training in days.
    b. Amount and type of hands-on training.
    c. Examination (length, format, and passing score).
    d. Topics covered in the course.
5. A copy of all course materials (student manuals, instructor notebooks, handouts, etc.).
6. A detailed statement about the development of the examination used in the course.
7. Names and qualifications of all course instructors. Instructors must have academic and/or field experience in asbestos abatement.
8. A description of and an example of the numbered certificates issued to students who attend the course and pass the examination.

B. Refresher Training Course Approval

The following minimum information is required for approval of refresher training courses by States:

1. The length of training in half-days or days.

2. The topics covered in the course.

3. A copy of all course materials (student manuals, instructor notebooks, handouts, etc.).

4. The names and qualifications of all course instructors. Instructors must have academic and/or field experience in asbestos abatement.

5. A description of and an example of the numbered certificates issued to students who complete the refresher course and pass the examination, if required.

C. Withdrawal of Training Course Approval

States must establish criteria and procedures for suspending or withdrawing approval from accredited training programs. States should follow their own administrative procedures in pursuing actions for suspension or withdrawal of approval of training programs. At a minimum, the criteria shall include:

(1) Misrepresentation of the extent of a training course's approval by a State or EPA;

(2) Failure to submit required information or notifications in a timely manner;

(3) Failure to maintain requisite records;

(4) Falsification of accreditation records, instructor qualifications, or other accreditation information; or

(5) Failure to adhere to the training standards and requirements of the EPA MAP or State Accreditation Program, as appropriate.

In addition to the criteria listed above, EPA may also suspend or withdraw a training course's approval where an approved training course instructor, or other person with supervisory authority over the delivery of training has been found in violation of other asbestos regulations administered by EPA. An administrative or judicial finding of violation, or execution of a consent agreement and order under 40 CFR 22.18, constitutes evidence of a failure to comply with relevant statutes or regulations. States may wish to adopt this criterion modified to include their own asbestos statutes or regulations. EPA may also suspend or withdraw approval of training programs where a training provider has submitted false information as a part of the self-certification required under Unit V.B. of the revised MAP.

Training course providers shall permit representatives of EPA or the State which approved their training courses to attend, evaluate, and monitor any training course without charge. EPA or State compliance inspection staff are not required to give advance notice of their inspections. EPA may suspend or withdraw State or EPA approval of a training course based upon the criteria specified in this Unit III.C.

IV. EPA Procedures for Suspension or Revocation of Accreditation or Training Course Approval.

A. If the Administrator decides to suspend or revoke the accreditation of any person or suspend or withdraw the approval of a training course, the Administrator will notify the affected entity of the following:

1. The grounds upon which the suspension, revocation, or withdrawal is based.

2. The time period during which the suspension, revocation, or withdrawal is effective, whether permanent or otherwise.

3. The conditions, if any, under which the affected entity may receive accreditation or approval in the future.

4. Any additional conditions which the Administrator may impose.

5. The opportunity to request a hearing prior to final Agency action to suspend or revoke accreditation or suspend or withdraw approval.

B. If a hearing is requested by the accredited person or training course provider pursuant to the preceding paragraph, the Administrator will:

1. Notify the affected entity of those assertions of law and fact upon which the action to suspend, revoke, or withdraw is based.

2. Provide the affected entity an opportunity to offer written statements of facts, explanations, comments, and arguments relevant to the proposed action.

3. Provide the affected entity such other procedural opportunities as the Administrator may deem appropriate to ensure a fair and impartial hearing.

4. Appoint an EPA attorney as Presiding Officer to conduct the hearing. No person shall serve as Presiding Officer if he or she has had any prior connection with the specific case.

C. The Presiding Officer appointed pursuant to the preceding paragraph shall:

1. Conduct a fair, orderly, and impartial hearing, without unnecessary delay.

2. Consider all relevant evidence, explanation, comment, and argument submitted pursuant to the preceding paragraph.

3. Promptly notify the affected entity of his or her decision and order. Such an order is a final Agency action.

D. If the Administrator determines that the public health, interest, or welfare warrants immediate action to suspend the accreditation of any person or the approval of any training course provider, the Administrator will:

1. Notify the affected entity of the grounds upon which the emergency suspension is based;

2. Notify the affected entity of the time period during which the emergency suspension is effective.

3. Notify the affected entity of the Administrator's intent to suspend or revoke accreditation or suspend or withdraw training course approval, as appropriate, in accordance with Unit IV.A. above. If such suspension, revocation, or withdrawal notice has not previously been issued, it will be issued at the same time the emergency suspension notice is issued.

E. Any notice, decision, or order issued by the Administrator under this section, and any documents filed by an accredited person or approved training course provider in a hearing under this section, shall be available to the public except as otherwise provided by section 14 of TSCA or by 40 CFR part 2. Any such hearing at which oral testimony is presented shall be open to the public, except that the Presiding Officer may exclude the public to the extent necessary to allow presentation of information which may be entitled to confidential treatment under section 14 of TSCA or 40 CFR part 2.

V. Implementation Schedule

The various requirements of this MAP become effective in accordance with the following schedules:

A. Requirements applicable to State Programs

1. Each State shall adopt an accreditation plan that is at least as stringent as this MAP within 180 days after the commencement of the first regular session of the legislature of the State that is convened on or after April 4, 1994.
2. If a State has adopted an accreditation plan at least as stringent as this MAP as of April 4, 1994, the State may continue to:
    a. Conduct TSCA training pursuant to this MAP.
    b. Approve training course providers to conduct training and to issue accreditation that satisfies the requirements for TSCA accreditation under this MAP.
    c. Issue accreditation that satisfies the requirements for TSCA accreditation under this MAP.
3. A State that had complied with an earlier version of the MAP, but has not adopted an accreditation plan at least as stringent as this MAP by April 4, 1994, may:
    a. Conduct TSCA training which remains in compliance with the requirements of Unit V.B. of this MAP. After such training has been self-certified in accordance with Unit V.B. of this MAP, the State may issue accreditation that satisfies the requirement for TSCA accreditation under this MAP.
    b. Sustain its approval for any training course providers to conduct training and issue TSCA accreditation that the State had approved before April 4, 1994, and that remain in compliance with Unit V.B. of this MAP.
    c. Issue accreditation pursuant to an earlier version of the MAP that provisionally satisfies the requirement for TSCA accreditation until October 4, 1994.

        Such a State may not approve new TSCA training course providers to conduct training or to issue TSCA accreditation that satisfies the requirements of this MAP until the State adopts an accreditation plan that is at least as stringent as this MAP.
4. A State that had complied with an earlier version of the MAP, but fails to adopt a plan as stringent as this MAP by the deadline established in Unit V.A.1., is subject to the following after that deadline date:
    a. The State loses any status it may have held as an EPA-approved State for accreditation purposes under section 206 of TSCA, 15 U.S.C. 2646.
    b. All training course providers approved by the State lose State approval to conduct training and issue accreditation that satisfies the requirements for TSCA accreditation under this MAP.
    c. The State may not:
        i. Conduct training for accreditation purposes under section 206 of TSCA, 15 U.S.C. 2646.

ii. Approve training course providers to conduct training or issue accreditation that satisfies the requirements for TSCA accreditation; or

iii. Issue accreditation that satisfies the requirement for TSCA accreditation.

EPA will extend EPA-approval to any training course provider that loses State approval because the State does not comply with the deadline, so long as the provider is in compliance with Unit V.B. of this MAP, and the provider is approved by a State that had complied with an earlier version of the MAP as of the day before the State loses its EPA approval.

5. A State that does not have an accreditation program that satisfies the requirements for TSCA accreditation under either an earlier version of the MAP or this MAP, may not:

a. Conduct training for accreditation purposes under section 206 of TSCA, 15 U.S.C. 2646;

b. Approve training course providers to conduct training or issue accreditation that satisfies the requirements for TSCA accreditation; or

c. Issue accreditation that satisfies the requirement for TSCA accreditation.

B. Requirements applicable to Training Courses and Providers

As of October 4, 1994, an approved training provider must certify to EPA and to any State that has approved the provider for TSCA accreditation, that each of the provider's training courses complies with the requirements of this MAP. The written submission must document in specific detail the changes made to each training course in order to comply with the requirements of this MAP and clearly state that the provider is also in compliance with all other requirements of this MAP, including the new recordkeeping and certificate provisions. Each submission must include the following statement signed by an authorized representative of the training provider: “Under civil and criminal penalties of law for the making or submission of false or fraudulent statements or representations (18 U.S.C. 1001 and 15 U.S.C. 2615), I certify that the training described in this submission complies with all applicable requirements of Title II of TSCA, 40 CFR part 763, Appendix C to subpart E, as revised, and any other applicable Federal, state, or local requirements.” A consolidated self-certification submission from each training provider that addresses all of its approved training courses is permissible and encouraged.

The self-certification must be sent via registered mail, to EPA Headquarters at the following address: Attn. Self-Certification Program, Field Programs Branch, Chemical Management Division (7404), Office of Pollution Prevention and Toxics, Environmental Protection Agency, 1200 Pennsylvania Ave., NW., Washington, DC 20460. A duplicate copy of the complete submission must also be sent to any States from which approval had been obtained.

The timely receipt of a complete self-certification by EPA and all approving States shall have the effect of extending approval under this MAP to the training courses offered by the submitting provider. If a self-certification is not received by the approving government bodies on or before the due date, the affected training course is not approved under this MAP. Such training providers must then reapply for approval of these training courses pursuant to the procedures outlined in Unit III.

C. Requirements applicable to Accredited Persons.

Persons accredited by a State with an accreditation program no less stringent than an earlier version of the MAP or by an EPA-approved training provider as of April 3, 1994, are accredited in accordance with the requirements of this MAP, and are not required to retake initial training. They must continue to comply with the requirements for annual refresher training in Unit I.D. of the revised MAP.

D. Requirements applicable to Non-Accredited Persons.

In order to perform work requiring accreditation under TSCA Title II, persons who are not accredited by a State with an accreditation program no less stringent than an earlier version of the MAP or by an EPA-approved training provider as of April 3, 1994, must comply with the upgraded training requirements of this MAP by no later than October 4, 1994. Non-accredited persons may obtain initial accreditation on a provisional basis by successfully completing any of the training programs approved under an earlier version of the MAP, and thereby perform work during the first 6 months after this MAP takes effect. However, by October 4, 1994, these persons must have successfully completed an upgraded training program that fully complies with the requirements of this MAP in order to continue to perform work requiring accreditation under section 206 of TSCA, 15 U.S.C. 2646.

[59 FR 5251, Feb. 3, 1994, as amended at 60 FR 31922, June 19, 1995; 70 FR 59889, Oct. 13, 2005; 75 FR 69353, Nov. 12, 2010; 76 FR 49674, Aug. 11, 2011; 78 FR 37978, June 25, 2013; 84 FR 34070, July 17, 2019; 84 FR 44232, Aug. 23, 2019]

Board for Asbestos, Lead, and Home Inspectors

Virginia Asbestos Licensing Regulations

2022 General Regulatory Review

The following list of topics are items that the Board may wish to consider during the general review of the Virginia Asbestos Licensing Regulations. This list is not inclusive of all items that the Board may present for amendment.

General

- Repeal existing regulation (18VAC15-20) and replace with new chapter (18VAC15-25).
- Review to ensure regulation comports with statute and applicable federal requirements.
- Focus on making regulation organized and clear.
- Incorporate Board's interpretive guidance where appropriate.
- Review for areas to reduce regulatory burdens.

Definitions

- Review definitions, revise and update where appropriate.

Entry Requirements

- Review entry requirements for both individuals and firms.
- Update procedures to reflect current agency practice.

Renewal and Reinstatement

- Review requirements and procedures for renewal and reinstatement of licenses.

Standards of Conduct and Practice

- Review responsibilities for each of the licensed disciplines.
- Review standards for asbestos abatement projects.

Training Programs

- Review requirements for training program approval.
- Review requirements for renewal of training programs
- Review standards of conduct and practice for training programs.

General Review

	Part I - Scope					
Chapter/Section	Caption	Description	Required by Statute or Federal Reg.? (Cite)	Affect Health, Safety, Welfare? (ID Risk of Harm) Least Restrictive Means?	Administrative Need? (Reason) Least Restrictive Means?	Comments
18VAC15-20-10	Scope.	Outlines which persons and firms require licensure or approval as an accredited training program.	Yes. §§ 54.1-503(A) 54.1-503(B) & 54.1-504 MAP (40 CFR Appendix C to Subpart E of Part 763)	N/A	N/A	

	Part II – Definitions and General					
Chapter/Section	Caption	Description	Required by Statute or Federal Reg.? (Cite)	Affect Health, Safety, Welfare? (ID Risk of Harm) Least Restrictive Means?	Administrative Need? (Reason) Least Restrictive Means?	Comments
18VAC15-20-20	Definitions.	Incorporates definitions from Virginia statute and federal regulation needed to implement the regulation;	Yes. § 54.1-500 40 CFR § 763.83	N/A	N/A	

		includes other definitions needed to make the regulation clear and understandable.	40 CFR § 61.141 MAP (40 CFR Appendix C to Subpart E of Part 763)			
18VAC15-20-21	Waiver of the requirements of this chapter.	Provides the Board may waive licensure requirements when it finds that a waiver would not lessen protection to the public health, safety, and welfare. Requesting party has the burden to show "continued public protection."	No.	N/A	N/A	May not be consistent with § 54.1-512(A), which permits the Board to waive licensure requirements for contractor, worker, and supervisor licenses only in an emergency. Consider repealing.

Part III – Entry

Chapter/Section	Caption	Description	Required by Statute or Federal Reg.? (Cite)	Affect Health, Safety, Welfare? (ID Risk of Harm) Least Restrictive Means?	Administrative Need? (Reason) Least Restrictive Means?	Comments

18VAC15-20-31	Application procedures.	Requires an applicant to submit an application for licensure on a board-provided form, along with applicable fee. Provides that an applicant will be notified if an application is incomplete. Authorizes the Board to make inquires or investigations regarding an applicant's qualifications. Provides that by making application to the Board, the applicant certifies the applicant has read and understands applicable statute and regulation. Provides that receipt of an application and deposit of fees does not mean application is approved. Provides a 12-month timeframe for an	No.	Yes. An applicant for licensure needs to provide information and documentation to the Board to substantiate the applicant meets the minimum requirements for a license. An applicant that cannot demonstrate minimum requirements may pose a risk to the public welfare, as the applicant may not possess the minimum knowledge and skills to engage in the regulated activity. An applicant that is ignorant of the statutes and regulations may not possess the minimum knowledge to engage in the regulated activity. An applicant that has not been issued a license is not permitted to engage in the regulated activity. The section provides clear notice that simple submission of an application and payment of fee does not constitute licensure.	Yes. The requirements in this section are necessary to effectively administer the licensing program. In order to appropriately issue a license, the Board needs accurate and complete information regarding the individual or firm seeking licensure. Requiring an applicant to complete a standard application form designed by the Board ensures the applicant only need provide information that is necessary for licensing staff to appropriately review an applicant's qualifications for licensure and allows for timely and efficient review and processing by licensing staff. By statute, the Board must be self-funded. Payment of a fee is needed to ensure the licensure program can operate. The provision regarding validity of an application and fee reflects DPOR policy that applications and fees are valid for one year.	

		applicant to complete application process; after which an applicant must submit a new application and fee.				
				The procedural requirements in the section are the least restrictive means to ensure an applicant meets licensure requirements. No viable alternatives could be identified.	The procedural requirements in the section are the least restrictive administrative means to ensure an applicant meets licensure requirements. No viable alternatives could be identified.	
18VAC15-20-32.A	Qualifications for licensure - individuals. (General.)	Requires applicants to meet all entry requirements at time application is made.	No.	Yes. An applicant that does not meet all entry requirements may pose a risk to the health, safety, and welfare of the public.	N/A	Consider removing language that specifies an applicant must meet entry requirements at time application is made. Current agency practice permits an applicant to supplement an application with additional information or documents to substantiate qualifications for licensure.
				The requirement that an applicant meet all entry requirements at time application is made may not be the least restrictive means to accomplishing the intended objective of this provision.		
18VAC15-20-32.B	Qualifications for licensure - individuals. (Name.)	Requires an applicant to disclose the applicant's full legal name.	No.	Yes. An applicant for licensure needs to provide information to the Board to substantiate the	Yes. The requirement in this section is necessary to effectively administer the licensing program. The agency needs to	

				applicant meets the minimum requirements for a license. This includes the ability to accurately identify the individual seeking a license.	know the identity of the person seeking licensure. An occupational license is a public record. The public record should clearly identify the individual to whom a license is issued.	
				This requirement is the least restrictive means to accurately identify an individual seeking a license. No viable alternatives could be identified.	The requirement in this section is the least restrictive administrative means to ensure an individual who applies for and is issued a license is clearly identified.	
18VAC15-20-32.C	Qualifications for licensure - individuals. (Age.)	Requires that an applicant must be 18 years of age.	No.	Yes. An individual who is a minor may not be sufficiently mature to assume the responsibilities, including legal responsibilities, of performing the regulated activity and may pose a risk to the public welfare.	N/A	
				This requirement is the least restrictive means to ensure minors do not engage in the regulated activity. No viable alternatives could be identified.		

18VAC15-20-32.D	Qualifications for licensure - individuals. (Address.)	Requires that an applicant disclose a physical address. A post office box address is acceptable when a physical address is provided.	No.	Yes. In order for the Board to communicate with an individual, to include the mailing of correspondence related to the application, license renewal, and other notices, the Board must have an accurate mailing address for the individual. An individual that does not provide the Board with an address is effectively beyond the Board's regulation. The requirement that an applicant provide a physical address may not be the least restrictive means to accomplishing the intended objective of this provision.	N/A	Consider revising this provision to require that an applicant provide a mailing address, which will serve as the individual's address of record for correspondence from the Board; but stipulate that an individual who provides a post office box address also provide a physical address. This approach is less restrictive than the current requirement, and is consistent with other DPOR licensure programs.
18VAC15-20-32.E.1	Qualifications for licensure - individuals. (Worker.)	Requires an individual applying for an initial asbestos worker license to provide proof of having completed: (i) an EPA/AHERA or board-approved initial accredited asbestos worker training program and all subsequent	Yes. 15 USC §§ 2646(b)(1)(B) and 2646(b)(2) MAP (40 CFR Appendix C to Subpart E of Part 763)	N/A	N/A	Under the MAP, a training certificate is valid for one year from the date upon which the person completed the training.

		EPA/AHERA or board-approved accredited asbestos worker refresher training programs; or (ii) an EPA/AHERA or board-approved initial accredited supervisor training program and all subsequent EPA/AHERA or board-approved accredited asbestos supervisor refresher training programs. The training must have been completed within the 12 months preceding the date the application is received.				
18VAC15-20-32.E.2	Qualifications for licensure - individuals. (Supervisor.)	Requires an individual applying for an initial asbestos supervisor license to provide proof of having completed: (i) an EPA/AHERA or board-approved initial accredited supervisor training program and all subsequent EPA/AHERA or board-approved accredited	Yes. 15 USC §§ 2646(b)(1)(B) and 2646(b)(2) MAP (40 CFR Appendix C to Subpart E of Part 763)	N/A	N/A	Under the MAP, a training certificate is valid for one year from the date upon which the person completed the training.

		asbestos supervisor refresher training programs. The training must have been completed within the 12 months preceding the date the application is received.				
18VAC15-20-32.E.3	Qualifications for licensure - individuals. (Inspector.)	Requires an individual applying for an initial asbestos inspector license to provide proof of having completed: (i) an EPA/AHERA or board-approved initial accredited inspector training program and all subsequent EPA/AHERA or board-approved accredited asbestos inspector refresher training programs. Requires an applicant to also provide evidence of experience in performing asbestos inspections in buildings or industrial facilities, including collecting bulk samples, categorizing	Yes. 15 USC §§ 2646(b)(1)(B) and 2646(b)(2) MAP (40 CFR Appendix C to Subpart E of Part 763)	N/A	N/A	Under the MAP, a training certificate is valid for one year from the date upon which the person completed the training. Experience requirements imposed by this section may exceed minimum standards imposed in the MAP. MAP requires training and examination, but appears to provide states with discretion to impose education and experience qualifications beyond these requirements. Consider whether education and experience qualifications should be removed.

		ACM, assessing ACM and preparing inspection reports. The amount of required experience depends upon the applicant's level of completed formal education. • BA in engineering, architecture, industrial hygiene, physical science or a related field + six (6) months of experience or five (5) completed inspections; • AA (two year) in engineering, architecture, industrial hygiene, physical science or a related field + 12 months of experience or 10 completed inspections; or • High school diploma + 24 months of experience or 15 completed inspections.				

		Experience may be obtained by: (i) Conducting inspections under the direct supervision of a licensed asbestos inspector, or EPA-accredited inspector (when no license is required). Reports must be signed by the licensed or accredited person; or (ii) conducting inspections outside of Virginia in accordance with applicable federal, state, and local statutes.				
18VAC15-20-32.E.4	Qualifications for licensure - individuals. (Management Planner.)	Requires an individual applying for an initial asbestos management planner license to provide proof of having completed: (i) an EPA/AHERA or board-approved initial accredited management planner training program and all subsequent EPA/AHERA or board-approved accredited	Yes. 15 USC §§ 2646(b)(1)(B) and 2646(b)(2) MAP (40 CFR Appendix C to Subpart E of Part 763)	N/A	N/A	Under the MAP, a training certificate is valid for one year from the date upon which the person completed the training. Experience requirements imposed by this section may exceed minimum standards imposed in the MAP. MAP requires training and examination, but appears to provide

		asbestos management planner refresher training programs. Requires an applicant to also provide evidence of experience in evaluating inspection reports, selecting response actions, analyzing the cost of response actions, ranking response actions, preparing operations and maintenance plans and preparing management plans. The amount of required experience depends upon the applicant's level of completed formal education. • BA in engineering, architecture, industrial hygiene, physical science or a related field + six (6) months of experience or five (5) completed management plans;				states with discretion to impose education and experience qualifications beyond these requirements. Consider whether education and experience qualifications should be removed.

		• AA (two year) in engineering, architecture, industrial hygiene, physical science or a related field + 12 months of experience or 10 completed management plans; or • High school diploma + 24 months of experience or 15 completed management plans. Experience may be obtained by: (i) Preparing management plans or conducting inspections under the direct supervision of a licensed asbestos management planner, inspector, or EPA-accredited management planner or inspector (when no license is required). Reports must be signed by the licensed				

		or accredited person; or (ii) preparing management plans or conducting inspections outside of Virginia in accordance with applicable federal, state, and local statutes.				
18VAC15-20-32.E.5	Qualifications for licensure - individuals. (Project Designer.)	Requires an individual applying for an initial asbestos project designer license to provide proof of having completed: (i) an EPA/AHERA or board-approved initial accredited project designer training program and all subsequent EPA/AHERA or board-approved accredited asbestos project designer refresher training programs. Requires an applicant to also provide evidence of experience in in the preparation of project	Yes. 15 USC §§ 2646(b)(1)(B) and 2646(b)(2) MAP (40 CFR Appendix C to Subpart E of Part 763)	N/A	N/A	Under the MAP, a training certificate is valid for one year from the date upon which the person completed the training. Experience requirements imposed by this section may exceed minimum standards imposed in the MAP. MAP requires training and examination, but appears to provide states with discretion to impose education and experience qualifications beyond these requirements. Consider whether education and experience qualifications should be removed.

		designs or project specifications. The amount of required experience depends upon the applicant's level of completed formal education. • BA in engineering, architecture, industrial hygiene, physical science or a related field + six (6) months of experience or five (5) completed project designs; • AA (two year) in engineering, architecture, industrial hygiene, physical science or related field + 12 months of experience or 10 completed project designs; or • High school diploma + 24 months of experience or 15 completed project designs.				

		Experience may be obtained by: (i) Preparing asbestos project designs under the direct supervision of a licensed asbestos project designer, or EPA-accredited project designer (when no license is required). Project designs must be signed by the licensed or accredited person; or (ii) preparing project designs outside of Virginia in accordance with applicable federal, state, and local statutes.				
18VAC15-20-32.E.6	Qualifications for licensure - individuals. (Project Monitor.)	Requires an individual applying for an initial asbestos project monitor license to provide proof of: (i) current certification from EPA as an asbestos project designer or supervisor, and completion of 16-hour board-approved	Yes. § 54.1-501(5) MAP (40 CFR Appendix C to Subpart E of Part 763)	N/A	N/A	Under the MAP, it is recommended states adopt training and accreditation requirements for project monitors; however, federal statue and regulation do not appear to impose requirements. State statute requires the Board to establish training requirements.

		asbestos project monitor training program; or (ii) completion of a board-approved asbestos project monitor training program of 40 hours, including examination. Requires an applicant to also provide evidence of 160 hours of experience in the performing of asbestos project monitoring through field work on project sites. Experience may be obtained by: (i) Acting as an asbestos project monitor under the direct supervision of a licensed asbestos project monitor, or EPA-accredited project monitor (when no license is required). Project monitoring reports must be signed by the licensed				Consider whether current training requirements should remain or be changed. The MAP does not recommend experience requirements. State statute does not mandate experience requirements. Consider whether experience qualifications should be removed.

		or accredited person; or (ii) acting as a project monitor outside of Virginia in accordance with applicable federal, state, and local statutes.				
18VAC15-20-32.F	Qualifications for licensure - individuals. (Experience and education verification.)	Applicants for asbestos inspector, management planner, project designer, and project monitor licenses must submit completed experience verification form signed by a supervisor who can verify the experience. A letter from a supervisor verifying experience may be submitted in lieu of a completed form. Self-employed individuals may submit a minimum of three completed inspections, management plans, project designs, or monitor reports (as applicable).	No.	No.	Yes. The requirement in this section is necessary to effectively administer the licensing program. Submission of proof of experience and education (where applicable) by way of a Board-approved application ensures the applicant will only need provide information that is necessary for licensing staff to appropriately review an applicant's qualifications for licensure and allows for efficient and timely review and processing by licensing staff. The section provides flexibility to applicants by permitting submission of a letter from a supervisor in lieu of a completed form. The section provides alternative requirements for individuals that are self-employed to provide proof of experience.	

		Applicants providing proof of a degree (when applicable) must have a completed education verification form sent from the granting institution.				
					The requirements in the section are the least restrictive administrative means to ensure an applicant meets experience and education qualifications, where required. No viable alternatives could be identified.	

18VAC15-20-32.G	Qualifications for licensure - individuals. (Criminal history.)	Requires an applicant not have been convicted or found guilty of: (i) any felony; (ii) any misdemeanor involving lying, cheating, or stealing; or (iii) any violation while engaged in environmental remediation activity that resulted in the significant harm or the imminent and substantial threat of significant harm to human health or the environment. Any plea of *nolo contendere* is considered a conviction. The record of conviction is considered *prima facie* evidence of a conviction or finding of guilt. The Board, in accordance with §	No.	Yes. Individuals with a prior criminal history may lack sufficient character or fitness to be trusted with a license. An individual who is willing to commit crimes, at the risk of criminal penalties (i.e. substantial fines and jail), is less likely to have regard for following administrative regulations where the potential sanctions are substantially less. Any Board decision to deny a license would need to be based on the criteria in § 54.1-204, which provide that a license cannot be denied solely due to a criminal conviction. Some of the requirements of this section may not be the least restrictive means to accomplishing the intended objective of this provision. The intended objective of this provision could be addressed by requiring	N/A	The objectives of this section could be achieved by less restrictive means. Consider revising requirements so that only recent misdemeanor convictions are potentially disqualifying. Matters regarding violations of environmental laws/regulations, to the extent they are not criminal violations, could be addressed by requiring applicants to disclose prior regulatory discipline. The provisions of this section related to *nolo contendere* pleas and record of conviction serving as *prima facie* evidence of conviction may be contrary to the requirements of § 54.1-204. Consider removing these provisions.

		54.1-204, may deny licensure.		disclosure of criminal convictions, instead of a establishing a standard of not having been convicted. The intended objective of this provision could be addressed by placing a time limit for misdemeanors (e.g. three years within date of application). This would permit individuals with older minor crimes to qualify for licensure without the need for further consideration by the Board. The intended objective of this provision could also be addressed without language specific to violations while engaged in environmental remediation activity. The intended objective of this provision could also be met without the language addressing *nolo contendere* pleas or the *prima facie* evidence standard.		

18VAC15-20-32.H	Qualifications for licensure - individuals. (Standards of practice/conduct.)	Requires that applicants be in compliance with the standards of practice and conduct in the regulation at the time the application is submitted, while it is under review, and when the license is in effect.	No.	Yes. This provision helps to protect the public welfare by making applicants subject to the practice and conduct standards licensees are required to follow while a license application is pending. An individual who engages in prohibited conduct while engaged in the regulated activity may pose a risk to the public welfare. This provision creates a mechanism for the Board to potentially deny licensure or license renewal to such an individual. This requirement is the least restrictive means to ensure that applicants for licensure adhere to the standards for engaging in the regulated activity. No viable alternatives could be identified.	N/A	

18VAC15-20-32.I	Qualifications for licensure - individuals. (Standing.)	Requires that an applicant be in "good standing" in every jurisdiction where licensed. Requires that an applicant not have had a license suspended, revoked, or surrendered in connection with a disciplinary action prior to applying for licensure. The Board has the discretion to deny licensure based on disciplinary action in any jurisdiction.	No.	Yes. Individuals who have been subject to previous regulatory discipline may lack sufficient character or fitness to be trusted with a license. Likewise, such individuals may lack the competency to engage in the regulated activity without creating a risk to the public welfare. Establishing a standard of "good standing" in every jurisdiction and never having had a license revoked, suspended, or surrendered may not be the least restrictive means to accomplishing the objective of this provision. The intended objective of this provision could be addressed by requiring disclosure of prior regulatory discipline.	N/A	The objectives of this section could be achieved by less restrictive means. Consider revising requirements so that applicants are only required to disclose previous discipline imposed against an occupational or professional license.
18VAC15-20-33.A	General qualifications for licensure: firms. (General.)	Requires that each firm applying for a license meet the requirements of the section.	No.	Yes. An applicant that does not meet all entry requirements may pose a risk to the health, safety, and welfare of the public.	N/A	

				This requirement is the least restrictive means to ensure applicants meet the requirements for licensure. No viable alternatives could be identified.		
18VAC15-20-33.B	General qualifications for licensure: firms. (Name.)	Requires that an applicant disclose the name under which it does business and holds itself out to the public. Requires that an applicant register any trade or fictitious names with the SCC pursuant to applicable statute.	No.	Yes. An applicant for licensure needs to provide information to the Board to substantiate the applicant meets the minimum requirements for a license. This includes the ability to accurately identify the firm seeking a license, including any fictitious names under which the firm may operate when engaged in the regulated activity. Under applicable law, firms are prohibited from conducting business under an assumed or fictitious in Virginia without first having registered such name with the SCC. This section compliments current statute by requiring compliance with name registration	N/A	

				requirements before being issued a license. This requirement is the least restrictive means to accurately identify a firm seeking a license. No viable alternatives could be identified.		
18VAC15-20-33.C	General qualifications for licensure: firms. (Address.)	Requires a firm to disclose the firm's mailing address and physical address. A post office box address is acceptable when a physical address is provided.	No.	Yes. In order for the Board to communicate with a firm, to include the mailing of correspondence related to the application, license renewal, and other notices, the Board must have an accurate mailing address for the firm. A firm that does not provide the Board with an address is effectively beyond the Board's regulation. In addition, a physical address is required in order for the Board or its agents, if necessary, to make contact with the	N/A	

				firm in order to conduct an investigation or inspect the firm's records. This requirement is the least restrictive means to ensure the Board is able to contact the firm. No viable alternatives could be identified.		
18VAC15-20-33.D.1	General qualifications for licensure: firms. (Corporations.)	Requires that a corporation be incorporated in Virginia, or be authorized to transact business in Virginia if a foreign corporation. Requires that a corporation be "in good standing" with the SCC at the time of application and when the license is in effect.	No.	Yes. Under applicable law, corporations are prohibited from conducting business in Virginia without first being lawfully incorporated or authorized to conduct business in Virginia from the SCC. This section compliments current statute by requiring compliance with corporate registration requirements before being issued a license. The requirement that a corporation be "in good standing" at all times may not be the least restrictive means to achieve the objective of this section. To the extent a corporation may not be "in good standing" at any	N/A	The "good standing" requirement in this section may not be the least restrictive means to achieve the objective of the section. Consider revising to remove this requirement. The objective of this section may be better achieved with a simpler provision that requires firms "be organized as business entities under the laws of the Commonwealth of Virginia or otherwise authorized to transact business in Virginia."

				given point in time, SCC registration rules allow for corporations to reinstate within five years of termination by the SCC.		
18VAC15-20-33.D.2	General qualifications for licensure: firms. (LLCs.)	Requires that an LLC receive a certificate of organization in Virginia, or be authorized to transact business in Virginia if a foreign LLC. Requires that an LLC be "in good standing" with the SCC at the time of application and when the license is in effect.	No.	Yes. Under applicable law, LLCs are prohibited from conducting business in Virginia without first being lawfully organized or authorized to conduct business in Virginia from the SCC. This section compliments current statute by requiring compliance with LLC registration requirements before being issued a license. The requirement that an LLC be "in good standing" at all times may not be the least restrictive means to achieve the objective of this section. To the extent an LLC may not be "in good standing" at any given point in time, SCC registration rules allow for LLCs to reinstate within five years of cancellation by the SCC.	N/A	The "good standing" requirement in this section may not be the least restrictive means to achieve the objective of the section. Consider revising to remove this requirement. The objective of this section may be better achieved with a simpler provision that requires firms "be organized as business entities under the laws of the Commonwealth of Virginia or otherwise authorized to transact business in Virginia."

18VAC15-20-33.D.3	General qualifications for licensure: firms. (Partnerships.)	Requires that a partnership have a written agreement. Requires that the written agreement provide that asbestos abatement services will be under the direction and control of the appropriate asbestos abatement licensee.	No.	It is not clear that this provision enhances the protection of the public health, safety, and welfare. The requirements for corporations and LLCs outlined above do not appear to impose similar requirements regarding the provision of asbestos abatement services.	N/A	Consider repealing this requirement.
18VAC15-20-33.E	General qualifications for licensure: firms. (Criminal history.)	Requires the firm disclose the following information about the firm, its owners, officers, managers, members, and directors: (i) all felony convictions; (ii) all misdemeanor convictions involving lying, cheating, or stealing; or (iii) any conviction resulting from engaing in environmental remediation activity that resulted in the significant harm or the imminent and substantial threat of significant harm to	No.	Yes. Individuals or firms with a prior criminal history may lack sufficient character or fitness to be trusted with a license. An individual who is willing to commit crimes, at the risk of criminal penalties (i.e. substantial fines and jail), is less likely to have regard for following administrative regulations where the potential sanctions are substantially less. The provisions in this section are intended to ensure that individuals who are in control of the firm holding the license,	N/A	The objectives of this section could be achieved by less restrictive means. Consider revising requirements so that only recent misdemeanor convictions are potentially disqualifying. Matters regarding violations of environmental laws/regulations, to the extent they are not criminal violations, could be addressed by requiring applicants to disclose prior regulatory discipline.

		human health or the environment. Any plea of *nolo contendere* is considered a conviction. The Board, in accordance with § 54.1-204, may deny licensure.		or responsible for how it engages in the regulated activity, would not pose a risk to the public welfare. Any Board decision to deny a license would need to be based on the criteria in § 54.1-204, which provide that a license cannot be denied solely due to a criminal conviction.		The provisions of this section related to *nolo contendere* pleas may be contrary to the requirements of § 54.1-204. Consider removing these provisions.

				Some of the requirements of this section may not be the least restrictive means to accomplishing the intended objective of this provision. The intended objective of this provision could be addressed by placing a time limit for misdemeanors (e.g. three or five years within date of application). This would permit individuals with older minor crimes to qualify for licensure without the need for further consideration by the Board. The intended objective of this provision could also be addressed without language specific to violations while engaged in environmental remediation activity. The intended objective of this provision could also be met without the language addressing *nolo contendere* pleas.		

18VAC15-20-33.F	General qualifications for licensure: firms. (Prior discipline.)	Requires the firm to disclose to disclose the suspension, revocation, or surrender of a license, certification, or registration in connection with a disciplinary action in any jurisdiction. Requires the firm to disclose whether the firm, its owners, officers, managers, members, or directors have been the subject of discipline prior to applying for licensure, or while the application is under review.	No.	Yes. Individuals who have been subject to previous regulatory discipline may lack sufficient character or fitness to be trusted with a license. Likewise, such individuals may lack the competency to engage in the regulated activity without creating a risk to the public welfare. The provisions in this section are intended to ensure that individuals who are in control of the firm holding the license, or responsible for how it engages in the regulated activity, would not pose a risk to the public welfare.	N/A	The provisions of this section could be revised to narrow the scope to require disclosure of discipline against a professional or occupation license. In addition, the provisions could be revised to include any regulatory discipline against the firm, not just a license action.

		The Board has the discretion to deny licensure based on disciplinary action in any jurisdiction.		This requirements in this section may not be the most restrictive means to ensure its objectives are met. The provisions could be revised to narrow the scope of disciplinary action to that taken against a professional or occupational license.		
18VAC15-20-33.G	General qualifications for licensure: firms. (Substantial identity.)	Provides that the Board may deny an application for a firm that has a "substantial identity of interest" with a person whose license or certificate has been revoked or not-renewed by the Board. Provides that a substantial identity of interest includes (i) a controlling financial interest by the individual or corporation principals as the revoked entity; or (ii) substantially identical owners, officers, managers,	No.	Yes. Individuals who have been subject to previous regulatory discipline may lack sufficient character or fitness to be trusted with a license. Likewise, such individuals may lack the competency to engage in the regulated activity without creating a risk to the public welfare. The provisions in this section are intended to ensure that individuals who were involved with a firm that previously had a license revoked or not renewed by the Board cannot simply apply for, an be granted, a new	N/A	The provisions of this section mirror language in the contractor licensure statute (§ 54.1-1110). The regulation defines "financial interest." However, this definition may need to be revised or clarified.

		members, or directors as the revoked entity.		license without further consideration by the Board. This provides a safeguard against the "revolving door" that individuals who lack the character and fitness to engage in the regulated activity can continue to be permitted to engage in the regulated activity by moving to or creating a new company when their firm has a license taken away.		
18VAC15-20-33.H	General qualifications for licensure: firms. (False application.)	Prohibits a firm from knowingly making a materially false statement, submitting falsified documents, or failing to disclose a material fact requested in connection with an application submitted to the Board.	No.	Yes. Firms that knowingly submit false statements or documents to the Board, or knowingly omit material information, in order to obtain a license may pose a substantial risk to the public welfare. The firms, and their principals, may lack the character and integrity to engage in the regulated activity. The provisions of this section may not be the least restrictive means to accomplishing the intended objective of addressing the submission of false information or	N/A	The intended objective of this section could be achieved through a provision in the "prohibited acts" section of the regulation, rather than under qualifications for licensure.

				withholding information material to the application. The objective could be sufficiently addressed in the "prohibited acts" section of the regulation.		
18VAC15-20-33.1	Qualifications for asbestos contractor license.	Requires that an asbestos contractor must hold a valid contractor license issued by the Board for Contractors, with the asbestos contracting specialty.	No.	Yes. Under applicable law, a firm must hold a contractor license issued by the Board for Contractors in order to engage in contracting work. Licensure requirements for the Board for Contractors require a contractor that performs asbestos abatement hold the appropriate specialty issued by the Board for that scope of practice. Under the scheme created by the General Assembly, an asbestos contractor firm must obtain a contractor license issued by the Board for Contractors, and an asbestos contractor license issued by the ALHI Board.	N/A	Consider whether to ask for a legislative change to remove the requirement that an asbestos contractor obtain a contractor license from the ALHI Board. Under the MAP, it appears that training requirements for supervisors may be sufficient to ensure compliance with federal requirements.

				This section compliments current statute and regulation by requiring compliance with contractor licensure requirements before being issued a license. This requirement is the least restrictive means to ensure that an asbestos contractor is appropriately licensed before engaging in the regulated activity. No viable alternatives could be identified.		
18VAC15-20-33.2.A	Qualifications for asbestos analytical laboratory license. (Analysis type.)	Requires that an asbestos analytical laboratory firm provide documentation of meeting standards to perform PLM, PCM, or TEM analysis. For PLM: • Current NVLAP accreditation; documentation of proficiency; or • A rating of "proficient" in the BAPAT Program; maintain the	Yes. § 54.1-501(4)	N/A	N/A	15 USC § 2646 mandates NIST develop an accreditation program for laboratories, and requires laboratories to comply with this program; but does not appear to mandate state accreditation. State statute requires the Board to make regulations governing licensure and performance criteria. Consider whether current qualification

		training and quality control document to demonstrate competency in performing analysis; or • Accreditation under the IHLAP; maintain the training and quality control documentation to demonstrate competency. For PCM: • Each analyst must have completed NIOSH 582 or equivalent course; and ○ (Fixed site.) Accredited under IHLAP; maintain training and quality control documentation to demonstrate competency; or ○ (Fixed site.) • A rating of "proficient" in the IHPAT Program; maintain the				requirements should remain or be changed.

		training and quality control document to demonstrate competency in performing analysis; or ○ (Fixed site.) Each analyst is listed in the AAR; each analyst has rating of "acceptable." ○ (Onsite.) A rating of "proficient" in the IHPAT Program; maintain the training and quality control document to demonstrate competency in performing onsite analysis for each analyst; or ○ (Onsite.) Accredited under IHLAP; maintain compliance with accreditation; maintain training and				

		quality control documentation to demonstrate competency in performing onsite analysis for each analyst; or ○ (Onsite.) Each analyst is listed in the AAR; each analyst has rating of "acceptable." For TEM: • a current accreditation by NVLAP to analyze asbestos airborne fibers using TEM; proof of accreditation.				
18VAC15-20-33.2.B	Qualifications for asbestos analytical laboratory license. (Responsible individual.)	Requires that a laboratory firm designate a responsible individual. The responsible individual is an employee, officer, manager, owner, or principal of the firm designated to ensure	No.	Yes. In order for the Board to appropriately exercise regulatory authority over a firm licensee, the Board must have record of the individual in the firm who will be responsible for the firm's regulatory compliance and to be the	N/A	

		compliance with applicable statute and Board regulations; and receive notices and communications from the Board.		point of contact for the firm. This requirement is the least restrictive means to ensure the Board is able to directly contact an individual within the firm who will be responsible for regulatory compliance. No viable alternatives could be identified.		
18VAC15-20-33.2.C	Qualifications for asbestos analytical laboratory license. (Branch office application.)	Requires a branch office of a laboratory firm to complete a branch office application. Requires a branch office to designate a resident responsible individual. A branch office must pay a fee in connection with an application.	No.	No.	Yes. Some laboratory firms operate from more than one office location. These locations may not always perform the same type of analysis. This requirement was intended to provide clarity and flexibility to laboratory firms that have multiple locations to ensure each office location of a laboratory licensee directly received correspondence from the Board; without the need for obtaining more than one license. These requirements may not be the least restrictive means to ensure that laboratory firms with multiple office locations are appropriately documented as part of the laboratory	The requirement for a separate application, effectively registration, of each branch office, to include payment of fee may not be the least restrictive approach. A possible alternative is to require that each firm provide information regarding any branch offices, to include point of contact, as a requirement of license application/maintenance.

					license, and ensure direct communication with the branch office. It is not clear that a separate application and fee are necessary.	
18VAC15-20-33.2.D	Qualifications for asbestos analytical laboratory license. (Branch office analysis type.)	Requires a branch office of a laboratory firm to provide the documentation required under 18VAC15-20-33.2.A for each type of analysis the branch office will perform.	No.	No.	Yes. Some laboratory firms operate from more than one office location. These locations may not always perform the same type of analysis. This requirement was intended to provide clarity and flexibility to laboratory firms that have multiple locations to ensure each office location of a laboratory licensee meets licensure requirements; without the need for obtaining more than one license. These requirements may not be the least restrictive means to ensure that laboratory firms with multiple office locations are appropriately documented as part of the laboratory license, and meet qualifications for the type of analysis they will perform.	The requirement for a separate application, effectively registration, of each branch office, may not be the least restrictive approach. A possible alternative is to require that each firm provide information regarding any branch offices, to include proof of qualification for analysis type, as a requirement of license application/maintenance.

18VAC15-20-33.2.E	Qualifications for asbestos analytical laboratory license. (Training and quality control documents.)	Requires that any training and quality control documentation a laboratory is required to maintain to qualify for licensure (detailed in subsection A) must be provided to the Board upon request.	No.	Yes. An applicant for licensure needs to provide information and documentation to the Board to substantiate the applicant meets the minimum requirements for a license. An applicant that cannot demonstrate minimum requirements may pose a risk to the public welfare, as the applicant may not possess the minimum knowledge and skills to engage in the regulated activity.	N/A	The objective of this section could be better addressed in the part of the regulation that establishes recordkeeping requirements and obligation to produce records upon request.
				The requirement that a laboratory applicant produce documentation upon the Board's request may not be the least restrictive means to accomplishing the objectives of this section. To the extent an applicant must provide documentation in order to qualify for licensure, failure to provide requested documentation during the application process would prevent the		

				laboratory firm from receiving a license. Under the application procedures section, the Board has the general authority to make additional inquires.		
18VAC15-20-34.A	Qualifications for accredited asbestos training program approval. (Application.)	Requires an applicant for an accredited asbestos training program approval to meet the minimum requirements outlined in the regulation. Applicants must submit an application.	No.	Yes. An applicant for training program approval needs to provide information and documentation to the Board to substantiate the applicant meets the minimum requirements for a training program approval. An applicant that cannot demonstrate minimum requirements may pose a risk to the public welfare, as the applicant may not meet the minimum criteria to provide asbestos training to individuals; thereby creating the risk the individuals who participate in such program do not possess the minimum knowledge and skills to engage in the regulated activity.	N/A	

				The procedural requirement in this section is the least restrictive means to ensure an applicant meets training program approval requirements. No viable alternatives could be identified.		
18VAC15-20-34.A.1	Qualifications for accredited asbestos training program approval. (Name/contact information.)	Requires the training program approval application to include the training provider's business name, physical address, mailing address, and phone number.	Yes. MAP (40 CFR Appendix C to Subpart E of Part 763)	N/A	N/A	
18VAC15-20-34.A.2	Qualifications for accredited asbestos training program approval. (Proof of EPA/other state accreditation.)	Requires the training program approval application to include copies of approval letters issued by EPA or other states granting approval of asbestos training programs presented by the provider.	Yes. MAP (40 CFR Appendix C to Subpart E of Part 763)	N/A	N/A	
18VAC15-20-34.A.3	Qualifications for accredited asbestos training program approval. (Fee.)	Requires payment of the fee outlined in 18VAC15-20-52.	No.	No.	Yes. The requirement in this section is necessary to effectively administer the licensing program.	

					By statute, the Board must be self-funded. Payment of a fee is needed to ensure the licensure program can operate. The procedural requirement in this section is the least restrictive administrative means to ensure an applicant meets training program approval requirements. No viable alternatives could be identified.	
18VAC15-20-34.A.4	Qualifications for accredited asbestos training program approval. (Curriculum.)	Requires the training program approval application to include the training program curriculum.	Yes. MAP (40 CFR Appendix C to Subpart E of Part 763)	N/A	N/A	
18VAC15-20-34.A.5	Qualifications for accredited asbestos training program approval. (Narrative.)	Requires the training program approval application to include a narrative explanation as to how the training program meets the following approval requirements: • Length of training in hours; • Amount and type of hands-on training;	Yes. MAP (40 CFR Appendix C to Subpart E of Part 763)	N/A	N/A	

		• Examinations (length, format and passing score); • Topics covered in the training program; and • Assurances of test security and how exams are administered.				
18VAC15-20-34.A.6	Qualifications for accredited asbestos training program approval. (Program materials.)	Requires the training program approval application to include a copy of all training program materials including: • Student manuals; • Instructor notebooks; • Handouts; • Training aids.	Yes. MAP (40 CFR Appendix C to Subpart E of Part 763)	N/A	N/A	
18VAC15-20-34.A.7	Qualifications for accredited asbestos training program approval. (Examination.)	Requires the training program approval application to include a copy of the examination and answer sheet.	Yes. MAP (40 CFR Appendix C to Subpart E of Part 763)	N/A	N/A	Under the MAP, states may administer their own examination or designate approved providers to administer the examination. Each examination must adequately cover the topics included in the training course for the discipline. Examination requirements for each

						course type are detailed in the MAP.
18VAC15-20-34.A.8	Qualifications for accredited asbestos training program approval. (Instructor qualifications.)	Requires the training program approval application to include the names and qualifications, including education and experience, of each instructor and subject areas that each instructor will teach.	Yes. MAP (40 CFR Appendix C to Subpart E of Part 763)	N/A	N/A	
18VAC15-20-34.A.9	Qualifications for accredited asbestos training program approval. (Certificate.)	Requires the training program approval application to include a description of and an example of a certificate that will be issued to students who successfully complete the training program. The certificate must contain the information required by the regulation.	Yes. MAP (40 CFR Appendix C to Subpart E of Part 763)	N/A	N/A	
18VAC15-20-34.A.10	Qualifications for accredited asbestos training program approval. (Audit date.)	Requires the training program approval application to include a proposed training program date for the	No.	No.	Yes. The requirements in this section are necessary to effectively administer the licensing program.	

		purpose of auditing the program. The proposed date will be confirmed, or an alternate date will be proposed within 10 days of the Board's receipt of the application and fee.			Training programs are required to be audited by the Board prior to approval. The requirement to include a proposed audit date with the application allows the Board to efficiently schedule the audit. The procedural requirements in the section are the least restrictive administrative means to ensure a training provider's training course is timely audited.	
18VAC15-20-34.B	Qualifications for accredited asbestos training program approval. (Complete application.)	Provides that a complete application must contain all of the required information. Provides that receipt of an application and deposit of fees does not indicate approval of the application.	No.	Yes. An applicant for training program approval needs to provide complete information and documentation to the Board to substantiate the applicant meets the minimum requirements for approval. An applicant that has not been issued a training program approval is not permitted to engage in the regulated activity. The section provides clear notice that simple submission of an application and payment of fee does not constitute approval.	N/A	

				The procedural requirements in the section are the least restrictive means to ensure an applicant meets training program approval requirements. No viable alternatives could be identified.		
18VAC15-20-34.C	Qualifications for accredited asbestos training program approval. (Submission timeframe.)	Requires that a training program approval application be submitted no less than 45 days prior to the requested audit date.	No.	No.	Yes. The requirements in this section are necessary to effectively administer the training approval program. The stipulated timeframe allows for reasonable time for the Board's staff to review the training program application and conduct the audit before approving a training program. The procedural requirements in the section are the least restrictive administrative means to ensure a training provider's training course is timely audited.	

18VAC15-20-34.D	Qualifications for accredited asbestos training program approval. (Preliminary review.)	Provides that upon receipt of a completed application, a preliminary review will be conducted to ensure written material and other documentation is accurate and up to date. Provides that an applicant will be notified of any deficiencies in the application. Deficiencies in the application must be corrected prior to the on-site audit.	No.	No.	Yes. The requirements in this section are necessary to effectively administer the licensing program. In order to appropriately issue a training program approval, the Board needs to ensure a training program application meets all requirements prior to the conduct of a course audit. An applicant should be provided the opportunity to correct any deficiencies in the application. The requirement to have a correct and complete application prior to the audit helps to ensure that the processing of the application and issuing of program approval will not be delayed following the audit. The procedural requirements in the section are the least restrictive administrative means to ensure a training provider's training course application is accurate and complete prior to the audit.	The provisions of this section could be simplified to provide that an application will be reviewed for compliance with requirements, and provide that the applicant will be notified of deficiencies, which must be corrected prior to the scheduled date of the audit. The provisions in this section should be clarified and revised to reflect current agency practice.

18VAC15-20-34.E	Qualifications for accredited asbestos training program approval. (Audit.)	Provides that upon successful completion of preliminary review, the onsite audit will be conducted. Provides that the training provider will be notified of any deficiencies noted during the audit, and given the opportunity to correct. Once any deficiencies are corrected, a letter of approval will be issued.	No.	No.	Yes. The requirements in this section are necessary to effectively administer the licensing program. In order to appropriately issue a training program approval, the Board needs to ensure a training program application meets all requirements. An applicant should be provided the opportunity to correct any deficiencies in the application. The procedural requirements in the section are the least restrictive administrative means to ensure a training provider's training course application is accurate and complete following the audit.	The provisions in this section should be clarified and revised to reflect current agency practice.
18VAC15-20-34.F	Qualifications for accredited asbestos training program approval. (Examination.)	Requires training programs to have a monitored, written final examination. Oral examinations for asbestos workers are exempted from written examination. Recommends examinations have a	Yes. MAP (40 CFR Appendix C to Subpart E of Part 763)	N/A	N/A	The MAP requires a closed-book examination. The MAP requires a minimum passing grade of 70%. The MAP requires training providers to keep record of a

		practical examination component to test skills. Requires the minimum passing grade be 70%. Requires record of a participant's examination be retained.				participant's examination. The MAP provides, but does not require, demonstration testing as part of the examination.
18VAC15-20-34.G	Qualifications for accredited asbestos training program approval. (Approval letters.)	Requires the training provider to maintain letters of approval for approved training programs at the business address listed on the approval letter. Requires the training provider to make training approval letters accessible to the public. Requires the training provider to maintain all records at the business address. Requires that records be made available for review upon demand by the Board.	Yes. MAP (40 CFR Appendix C to Subpart E of Part 763)	N/A	N/A	The MAP does not require training providers to maintain training approval letter. The MAP requires that training providers allow reasonable access to all records required by the MAP, and other records required by States, to EPA and state agencies. The MAP encourages, but does not require, these records be accessible to the public. Consider whether to remove the requirement that training program approval letters be retained at the business address.

						Consider whether to remove requirement that training approval letter be accessible to the public. The provisions of this section should be addressed in standards of practice and conduct.
Part V – Renewal						
18VAC15-20-60.A	Renewal required. (Expiration - individuals.)	Provides that licenses issued to individuals will expire one year from the last day of the month in which the license was issued.	Yes. MAP (40 CFR Appendix C to Subpart E of Part 763)	N/A	N/A	Under the MAP, the accreditation of individuals is valid for one year.

18VAC15-20-60.B	Renewal required. (Expiration – firms.)	Provides that licenses issued to contractor firms and analytical laboratory firms expire 24 months from the last day of the month in which the license was issued.	No.	Yes. The requirements of this section are necessary to assure continued competency to engage in the regulated activity; and are necessary to protect the health, safety, and welfare of the public. A firm that may no longer meet the requirements for licensure due to (i) changes in personnel; or (ii) changes to the business should not be permitted to engage in the regulated activity. Providing a reasonable term for licensure and renewal helps ensure that the firm continues to meet minimum requirements to engage in the regulated activity, without disrupting the firm's ability to conduct business. The requirements in the section are the least restrictive means to ensure a firm continues to meet minimum requirements.	N/A	The two-year license period is consistent with other DPOR licensure programs.

18VAC15-20-60.C	Renewal required. (Expiration – training programs.)	Provides that accredited asbestos training programs expire 24 months from the last day of the month in which was approved.	No.	Yes. The requirements of this section are necessary to assure continued competency to engage in the regulated activity; and are necessary to protect the health, safety, and welfare of the public. A training program that may no longer meet the requirements for approval due to (i) changes in personnel; (ii) changes in curriculum; or (iii) other changes to the program should not be permitted to engage in the regulated activity. Providing a reasonable term for approval and renewal helps ensure that the provider continues to meet minimum requirements to engage in the regulated activity, without disrupting the provider's ability to conduct business. The requirements in the section are the least restrictive means to ensure a training program continues to meet minimum requirements.	N/A	The two-year approval period is consistent with other DPOR programs.

18VAC15-20-60.D	Renewal required. (Renewal fee.)	Requires payment of a renewal fee to renew a license or training program.	No.	No.	Yes. The requirements in this section are necessary to effectively administer the licensing program. By statute, the Board must be self-funded. Payment of a fee is needed to ensure the licensure program can operate.	
					The procedural requirements in the section are the least restrictive administrative means to ensure an applicant meets licensure requirements. No viable alternatives could be identified.	
18VAC15-20-70.A	Procedures for renewal. (Renewal notice.)	Provides that the department will mail a renewal notice to regulant at the last known address. Provides the notice will outline renewal procedures and renewal fee. Provides that failure to receive a renewal notice does not relieve the regulant of the obligation to renew in a timely fashion.	No.	No.	Yes. The requirements in this section are necessary to effectively administer the licensing program. These provisions help ensure that regulants are able to timely renew licenses and training program approvals without disrupting the ability of the regulant to engage in the regulated activity. Once a license or training program approval has expired, engaging in the regulated activity would be unlawful.	The provisions in this section should be clarified and revised to reflect current agency practice.

					The procedural requirements in the section are the least restrictive administrative means to ensure a regulant receives notice of the requirement to renew and is able to timely renew.	
18VAC15-20-70.B	Procedures for renewal. (Return of notice and fee.)	Requires that a regulant return the renewal notice to the Board along with renewal fee prior to the expiration date of the license or program approval. Regulants may return a copy of the license with the fee payment if they do not receive the renewal notice.	No.	No.	Yes. The requirements in this section are necessary to effectively administer the licensing program. These provisions help ensure that regulants are able to timely renew licenses and training program approvals without disrupting the ability of the regulant to engage in the regulated activity. Once a license or training program approval has expired, engaging in the regulated activity would be unlawful. The procedural requirements in the section are the least restrictive administrative means to ensure a regulant is able to timely renew.	The provisions in this section should be clarified and revised to reflect current agency practice.
18VAC15-20-70.C	Procedures for renewal. (Refresher training.)	Requires a licensee to provide proof of completing refresher training with renewal.	Yes. MAP (40 CFR Appendix C to	N/A	N/A	The MAP requires annual refresher training in order maintain accreditation.

		Requires a copy of the training certificate documenting the successful completion of the refresher training for the license discipline being renewed. Provides the Board will accept any asbestos training programs that are approved by EPA/AHERA or the board.	Subpart E of Part 763)			The provisions in this section should be clarified and revised to reflect current agency practice.
18VAC15-20-70.D	Procedures for renewal. (Training programs.)	Requires that, prior to the expiration of the approval, a training program desiring to renew its approval must return the renewal notice to the Department, along with (i) required fee; (ii) any changes made to the training program; (iii) dates when training material was last updated; and (iv) a statement indicating the training program continues to	No.	No.	Yes. The requirements in this section are necessary to effectively administer the licensing program. These provisions help ensure that training providers are able to timely renew licenses and training program approvals without disrupting the ability of the regulant to engage in the regulated activity. Once a license or training program approval has expired, engaging in the regulated activity would be unlawful.	

		meet renewal requirements. Training programs may a letter indicating the desire to renew along with the fee payment if they do not receive the renewal notice.			The procedural requirements in the section are the least restrictive administrative means to ensure a regulant is able to timely renew.	
18VAC15-20-70.E	Procedures for renewal. (Project monitors.)	Provides that project monitors who hold a supervisor or project designer license may submit either a supervisor refresher or a project designer refresher.	Yes. § 54.1-501(5) MAP (40 CFR Appendix C to Subpart E of Part 763)	N/A	N/A	Under the MAP, it is recommended states adopt training and accreditation requirements for project monitors; however, federal statue and regulation do not appear to impose requirements. State statute requires the Board to establish training requirements. Consider whether current training requirements should remain or be changed.

18VAC15-20-70.F	Procedures for renewal. (Refresher certificates.)	Provides that refresher certificates may only be used once to renew a license.	No.	Yes. A licensee seeking renew an individual license needs to provide information and documentation to the Board to substantiate the licensee meets the minimum requirements for renewal of a license. A licensee is required to take refresher training annually. Allowing a licensee to use the refresher certificate for more than one renewal cycle does not substantiate the licensee is in compliance with this requirement. A renewal applicant that cannot demonstrate minimum requirements may pose a risk to the public welfare, as the applicant may not possess the minimum knowledge and skills to engage in the regulated activity. The requirements in the section are the least restrictive means to ensure an individual licensee continues to meet minimum requirements.	N/A	

18VAC15-20-70.G	Procedures for renewal. (Late renewal.)	Provides that a licensee or training program that does not renew within 30 days of the expiration date will be subject to a late renewal fee.	No.	No.	Yes. The requirement in this section is necessary to effectively administer the licensing program. The imposition of a late renewal fee is a disincentive intended to ensure licensees and training programs timely renew. Once a license or training program approval has expired, engaging in the regulated activity would be unlawful. The requirement in this section are the least restrictive administrative means to ensure a regulant timely renews.	
18VAC15-20-70.H	Procedures for renewal. (Failure to renew.)	Requires that a licensee or training program that does not renew within 12 months of the expiration date can no longer renew, and must apply for a new license or training program approval.	No.	Yes. The requirements of this section are necessary to assure continued competency to engage in the regulated activity; and are necessary to protect the health, safety, and welfare of the public. A licensee or training program that has been expired for more than 12 months may no longer meet the minimum	N/A	

				requirements to engage in the regulated activity.		
				The procedural requirements in the section are the least restrictive means to ensure that individuals, firms, and training providers are minimally qualified to engage in the regulated activity. No viable alternatives could be identified.		

FEDERAL/STATE LAW REGULATION CROSS REFERENCE

NEW BUSINESS

a. Consider Necessary Regulatory Changes

OTHER BUSINESS

a. Discuss Topics for Next Meeting
b. Set Next Meeting Date(s)

COMPLETE CONFLICT OF INTEREST FORMS AND TRAVEL VOUCHERS

ADJOURN

Please return your documents to Raven Custer