



Standard Practice for Comprehensive Building Asbestos Surveys¹

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1. Scope

1.1 This practice describes procedures for conducting comprehensive surveys of buildings and facilities for the purpose of locating, identifying, quantifying, and assessing asbestos-containing materials.

1.2 The results of a Comprehensive Building Asbestos Survey are intended to be used for ongoing management of asbestos-containing materials, including Operations and Maintenance (O&M), removal, and other response actions. This includes response actions associated with renovations. A Comprehensive Building Asbestos Survey is also intended to provide information required for removal of asbestos-containing materials prior to demolition of a building or facility.

1.3 This practice discusses three types of surveys: Baseline Surveys, Project Design Surveys, and Pre-Construction Surveys.

1.4 This practice discusses the following activities for each of the above types of surveys:

1.4.1 Planning the survey to meet defined objectives;

1.4.2 Obtaining and reviewing information on the building or facility including previous surveys and response actions;

1.4.3 Conducting the physical activities of inspecting the premises and collecting bulk samples of suspect materials;

1.4.4 Analyzing the bulk samples for asbestos type and content;

1.4.5 Assessing the Current Condition and Potential for Disturbance of asbestos-containing materials; and

1.4.6 Preparing a report that includes a narrative discussion of the findings, tabulations of inspection, sampling and analysis results, graphical depiction of the areas inspected, and the results of the assessment.

1.5 A Comprehensive Building Asbestos Survey provides sufficient information about the asbestos-containing materials in a building or facility for purposes of a real property transaction. In situations where the amount of information

required by a party to the transaction is minimal, a Limited Asbestos Screen (see Practice E2308) may suffice in place of the Comprehensive Building Asbestos Survey.

1.6 This practice does not include air sampling or surface (dust) sampling for purposes of evaluating a potential exposure hazard from airborne asbestos fibers.

1.7 **Warning**—Asbestos fibers are acknowledged carcinogens. Breathing asbestos fibers can result in disease of the lungs including asbestosis, lung cancer, and mesothelioma. Precautions in this practice should be taken to avoid creating and breathing airborne asbestos particles from materials known or suspected to contain asbestos. See 2.2 for regulatory requirements addressing asbestos.

1.8 The values stated in SI units are to be regarded as standard. The values given in parentheses are mathematical conversions to inch-pound units that are provided for information only and are not considered standard.

1.9 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.*

2. Referenced Documents

2.1 *ASTM Standards*:²

D7521 Test Method for Determination of Asbestos in Soil

D7712 Terminology for Sampling and Analysis of Asbestos

E631 Terminology of Building Constructions

E1368 Practice for Visual Inspection of Asbestos Abatement Projects

E1494 Practice for Encapsulation Testing of Friable Asbestos-Containing Surfacing Materials

E2308 Guide for Limited Asbestos Screens of Buildings (Withdrawn 2014)³

E2394 Practice for Maintenance, Renovation, and Repair of Installed Asbestos Cement Products

¹ This practice is under the jurisdiction of ASTM Committee D22 on Air Quality and is the direct responsibility of Subcommittee D22.07 on Sampling and Analysis of Asbestos.

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² For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

³ The last approved version of this historical standard is referenced on www.astm.org.

MNL-23 Manual on Asbestos Control: Surveys, Removal, and Management – Second Edition, 2005

2.2 Other Documents:

29 CFR 1910.134 Respiratory Protection Standard⁴

29 CFR 1910.146 Permit-required Confined Spaces⁴

29 CFR 1926.1101 Occupational Exposure to Asbestos (OSHA Construction Standard)⁴

40 CFR Part 61 National Emission Standards for Hazardous Air Pollutants: Subpart M—Asbestos⁵

40 CFR Part 763 Subpart E—Asbestos-Containing Materials in Schools (EPA AHERA Regulations)⁵

40 CFR Part 763 Subpart E, Appendix C (EPA Model Accreditation Plan)⁵

EPA 560/5-85-024 Guidance for Controlling Asbestos-Containing Materials in Buildings (“Purple Book”), 1985⁵

EPA 560/5-85-030A Asbestos in Buildings: Simplified Sampling Scheme for Surfacing Materials (“Pink Book”), 1985⁵

EPA 600R-04/004 Research Method for Sampling and Analysis of Fibrous Amphibole in Vermiculite Attic Insulation, January 2004⁵

EPA 600/R-93/116 Method for the Determination of Asbestos in Bulk Building Materials, June 1993⁵

State of New York Environmental Laboratory Approval Program (ELAP) Certification Manual, Item No. 198.1 Polarized Light Microscopy Method for identifying and Quantifying Asbestos in Non-Friable Organically Bound Bulk Samples, May 15, 2000⁶

State of New York Environmental Laboratory Approval Program (ELAP) Certification Manual, Item No. 198.4 Transmission Electron Microscopy Method for identifying and Quantifying Asbestos in Non-Friable Organically Bound Bulk Samples, March 1, 1997⁶

3. Terminology

3.1 *Definitions*—For definitions of building terms, see Terminology E631.

3.2 *Terms Defined in Practice* E1368—The user is referred to Practice E1368 for terms specifically related to asbestos abatement for purposes of a Project Design Survey.

3.2.1 *asbestos-containing materials, n*—material containing more than one percent asbestos.

3.2.1.1 *miscellaneous materials, n*—material, other than surfacing material and thermal system insulation, on interior and exterior structural, mechanical, electrical, or architectural components, and surfaces. Miscellaneous material includes but is not limited to ceiling tiles, gaskets, floor coverings and mastics, wallboard joint compound, roofing materials, and cementitious products.

⁴ Available from Occupational Safety and Health Administration (OSHA), 200 Constitution Ave., Washington, DC 20210, <http://www.osha.gov>.

⁵ Available from United States Environmental Protection Agency (EPA), Ariel Rios Bldg., 1200 Pennsylvania Ave., NW, Washington, DC 20460, <http://www.epa.gov>.

⁶ Available from the Environmental Laboratory Approval Program (ELAP), Wadsworth Center, P.O. Box 509, Albany, NY 12201, <http://www.wadsworth.org/labcert/elap/elap.htm>.

3.2.1.2 *surfacing material, n*—material that is sprayed, troweled-on, or otherwise applied to interior and exterior structural and architectural surfaces. Surfacing material includes acoustical plaster on ceilings, fireproofing on structural members, textured paint and exterior stucco, and other materials applied to surfaces for acoustical, decorative, fireproofing, and other purposes.

3.2.1.3 *thermal system insulation, n*—material which is applied to interior and exterior mechanical components to reduce heat gain or loss. Thermal system insulation includes insulation on pipes, fittings, boilers, breeching, tanks, ducts, and other mechanical components.

3.2.2 *crawl space, n*—an accessible area that may have a dirt floor, usually with low head room.

3.2.3 *high efficiency particulate air (HEPA) filter, n*—the final stage filter on a negative pressure ventilation device (see 3.2.19 in E1368) or on a vacuum cleaner, capable of trapping and retaining at least 99.97 percent of all mono-dispersed particles of 0.3 micrometres in diameter.

3.2.4 *dust and debris, n*—visible particles, fragments, or chunks of material, large enough to have settled in the work area by virtue of their weight, that are presumed to have originated from the material abated by the response action, or from a fiber release episode.

3.2.5 *fiber release episode, n*—uncontrolled or unintentional disturbance of asbestos-containing materials which results in the generation of dust and debris.

3.2.6 *friable material, n*—material easily crumbled or powdered by moderate (hand) pressure.

3.2.7 *response action, n*—a method of abatement (such as removal, encapsulation, or enclosure) or operations and maintenance (such as repair, clean-up, or preventive measures) of asbestos-containing material in any form, for any purpose whatsoever.

3.2.8 *visual inspection process, n*—the activities before, during, and at the conclusion of a response action that are associated with detecting the presence of visible residue, dust and debris, or unremoved material and verifying the absence thereof at the completion of a response action.

3.3 Definitions of Terms Specific to This Standard:

3.3.1 *asbestos, n*—the asbestiform varieties of: chrysotile (serpentine); crocidolite (riebeckite); amosite (cummingtonite-grunerite); anthophyllite; tremolite; and actinolite.

3.3.2 *accessible location, n*—a functional space or part thereof that can be inspected without requiring destructive testing or presenting an unacceptable health or safety risk to the inspector, and where entry is not prohibited by security or other institutional restrictions.

3.3.3 *building asbestos survey, n*—an activity to determine the presence, location, condition, and quantity of asbestos-containing materials in a building or facility, or on the property containing the building or facility.

3.3.4 *bulk sample, n*—a sample of suspect asbestos-containing material collected for identification of asbestos and determination of the percent of the components in the sample.

3.3.5 *concealed space, n*—a location requiring destructive testing for penetration of a building or component surface for inspection and, if necessary, sampling of suspect material. Concealed spaces include, but are not limited to, cavities inside soffits, walls and chases, plenums above solid ceilings, sub-floor ducts and cable runs, and the interior of HVAC equipment.

3.3.6 *destructive testing, n*—inspection procedures that necessarily involve objectionable or noticeable damage to building surfaces, or require penetration of a surface such as a wall, ceiling, chase, or shaft to gain access to a concealed space. Lifting a ceiling tile or opening a hatch is not destructive testing.

3.3.7 *excluded area, n*—a functional space or part thereof where entry is prohibited by security or other institutional restrictions.

3.3.8 *functional space, n*—an area within a building or facility that is used for a specific purpose. Examples include a warehouse in a manufacturing plant and a conference room in an office building. A functional space can be vertical in extent, such as a pipe chase, and span several floors.

3.3.9 *homogeneous area, n*—surfacing material, thermal system insulation material, or miscellaneous material that is uniform in color and texture and apparent or known date of installation.

3.3.10 *laboratory, n*—an entity that is equipped and qualified to perform one or more of the following analyses, using approved methods: (1) identify and quantify asbestos in bulk samples by Polarized Light Microscopy, (2) identify and quantify asbestos in bulk samples by Transmission Electron Microscopy, and (3) identify and quantify airborne fibers with Phase Contrast Microscopy.

3.3.11 *limits of abatement, n*—an area where asbestos-related activities will be conducted before, during and at the conclusion of the project, that is contiguous with and includes the limits of construction for an associated renovation or demolition project.

3.3.12 *non-friable organically bound (NOB) materials, n*—materials that are not friable and that consist of fibers and other particulate matter embedded in a solid matrix of asphaltic, vinyl or other organic substances.

3.3.13 *operations and maintenance (O&M) program, n*—a proactive management program to provide periodic surveillance of asbestos-containing materials, maintain them in good condition, mitigate fiber release from existing asbestos-containing materials, and clean up asbestos-containing dust and debris that has been released, in order to minimize worker or occupant exposure to asbestos fibers.

3.3.14 *polarized light microscopy (PLM), n*—a method of analytical mineralogy that uses an optical microscope to determine the optical properties of sample constituents and, in the case of bulk sample analysis for asbestos, to provide positive identification of suspect fibers as asbestos and to quantify the percent of asbestos in the sample.

3.3.15 *skim coat, n*—a thin finish coat applied to an existing plaster surface or other substrate to improve appearance or other reasons.

3.3.16 *suspect material, n*—material that is sampled or is presumed to contain asbestos on the basis of its location, purpose, appearance, and other factors considered by the inspector.

3.4 *Terms Defined in Practice D7712:*

3.4.1 *asbestos, n*—a collective term that describes a group of naturally occurring, inorganic, highly fibrous, silicate dominated minerals, which are easily separated into long, thin, flexible fibers when crushed or processed.

3.5 *Acronyms:*

3.5.1 *ACM*—Asbestos-containing material(s)

3.5.2 *AHERA*—Asbestos Hazard Emergency Response Act

3.5.3 *EPA*—U.S. Environmental Protection Agency

3.5.4 *HEPA*—High Efficiency Particulate Air

3.5.5 *NAD*—No Asbestos Detected

3.5.6 *NESHAP*—National Emission Standards for Hazardous Air Pollutants; specifically, the National Emission Standard for Asbestos (40 CFR Part 61, Subpart M)

3.5.7 *NOB*—Non-friable organically-bound

3.5.8 *OSHA*—U.S. Department of Labor, Occupational Safety and Health Administration

3.5.9 *PPE*—Personal Protective Equipment

3.5.10 *PLM*—Polarized Light Microscopy

3.5.11 *TEM*—Transmission Electron Microscopy

3.5.12 *VAI*—Vermiculite Attic Insulation

4. Significance and Use

4.1 Management of asbestos-containing materials in buildings and facilities requires knowledge of the location, type, quantity, and condition of the material. The more complete and accurate the information available, the more appropriate and cost-effective are the control measures used to reduce possible exposure to airborne asbestos fibers. This is true whether the asbestos-containing materials remain undisturbed and completely intact, are selectively removed for maintenance or prior to renovation, or are removed to the greatest extent feasible before demolishing the building or facility.

4.2 This practice describes three types of surveys that support different objectives. These are the Baseline Survey, the Project Design Survey, and the Pre-Construction Survey.

4.2.1 The Baseline Survey is a building-wide or facility-wide inspection that provides a general sense of the overall location, type, quantity, and condition of asbestos-containing materials present. It is thorough in that most accessible functional spaces are inspected and bulk samples taken of suspect materials observed. The baseline survey provides information for long-term management of asbestos-containing materials and prioritization of response actions. The presence of asbestos in suspect materials may be assumed or presumed in some cases without bulk samples being taken or analyzed. However, the baseline survey is unobtrusive in that samples are