



Standard Practice for Evaluating Laboratories Engaged in the Determination of Lead in Paint, Dust, Airborne Particulates, and Soil Taken From and Around Buildings and Related Structures¹

This standard is issued under the fixed designation E 1583; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ϵ) indicates an editorial change since the last revision or reapproval.

1. Scope

1.1 This practice covers the qualifications, including minimum requirements for personnel and equipment, duties, responsibilities, and services of laboratories engaged in the determination of lead in paint, dust, airborne particulates, and soil taken from and around buildings and related structures.

1.2 This practice has been developed consistent with Guides E 548 and E 994 and ISO Guide 25.

1.3 This practice contains notes that are explanatory and are not part of the mandatory requirements of the practice.

1.4 *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:

D 3335 Test Method for Low Concentrations of Lead, Cadmium, and Cobalt in Paint by Atomic Absorption Spectroscopy²

E 548 Guide for General Criteria Used for Evaluating Laboratory Competence³

E 994 Guide for Calibration and Testing Laboratory Accreditation Systems General Requirements for Operation and Recognition³

E 1187 Terminology Relating to Laboratory Accreditation³

2.2 ISO Standard:

ISO Guide 25 General Requirements for the Competence of Calibration and Testing Laboratories⁴

2.3 Other Documents:

Official Methods of Analysis of the Association of Official Analytical Chemists (AOAC), 14th Edition (1984)⁵

EPA SW846, Testing Methods for Evaluating Solid Waste, Physical/Chemical Methods⁶

NIOSH Manual of Analytical Methods, Third Edition, P. M. Eller, Ed. (1984)⁷

RTI Report, Standard Operating Procedures for Lead in Paint by Hotplate or Microwave-Based Acid Digestions and Atomic Absorption or Inductively Coupled Argon Plasma Emission Spectrometry, RTI Project No. 91U-4699-100 (September 1991)⁸

3. Terminology

3.1 *Definitions*—For definitions of terms used in this practice, refer to Terminology E 1187.

4. Significance and Use

4.1 This practice provides the basic criteria to be used by accreditation bodies and others in evaluating the qualifications of laboratories engaged in the testing of lead in paint, dust, airborne particulates, and soil taken from and around buildings and related structures. The criteria in this practice shall be supplemented by additional specific criteria and requirements, when appropriate; for example, when necessary to be in accordance with federal, state, or local government regulations.

4.2 The accreditation is for organizations and not individuals.

4.3 The practice is intended to provide objective information on the capabilities needed by laboratories to determine lead in paint, dust, airborne particulates, and soil taken from and around buildings and related structures. It is not intended to be used as a measure of the performance of a laboratory in conducting the tests.

4.4 This practice is also intended for use by calibration and testing laboratories in the development and implementation of their quality systems. It is also intended for use by an organization to request or perform an evaluation of its own in-house facilities in accordance with this practice.

¹ This practice is under the jurisdiction of ASTM Committee E-6 on Performance of Buildings and is the direct responsibility of Subcommittee E06.23 on Lead Paint Abatement.

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² *Annual Book of ASTM Standards*, Vol 06.01.

³ *Annual Book of ASTM Standards*, Vol 14.02.

⁴ Available from ISO, 1 Rue de Varembe, Case Postal 56, Crt 1221, Geneva 20, Switzerland.

⁵ Available from Association of the Official Analytical Chemists, Inc., 1111 North 19th St., Suite 210, Arlington, VA 22209.

⁶ Available from the Government Printing Office, Superintendent of Documents, Washington, DC 20402.

⁷ Available from NIOSH Publications, 4676 Columbia Parkway, Cincinnati, OH 45226.

⁸ Available from Research Triangle Institute, P.O. Box 12194, Research Triangle Park, NC 27709-2194.

5. Organization

5.1 The laboratory shall be legally identifiable. The laboratory shall be organized and shall operate in such a way that its facilities meet the requirements of this practice.

5.2 The laboratory shall meet the following requirements:

5.2.1 Have an organizational structure, including quality system, that enables it to maintain the capability to perform satisfactorily ASTM and other tests for the determination of lead in paint, dust, airborne particulates, and soil taken from and around buildings and related structures;

5.2.2 Be able to demonstrate, on request from the persons or organizations evaluating the laboratory's competence, that the laboratory is capable of performing the tests for which the laboratory is being evaluated;

5.2.3 Be organized so that staff members are not subject to undue pressure or inducement that might influence their judgment or the results of their work;

5.2.4 Be organized in such a way that confidence in its independence of judgment and integrity is maintained at all times;

5.2.5 Be organized in such a way that each staff member is aware of both the extent and limitations of their responsibility;

5.2.6 Have a technical manager (however named) who has overall responsibility for the technical operations of the laboratory, and has demonstrated competence in lead analyses through education or professional experience, or both; and

5.2.7 Have a quality manager (however named) who has responsibility for the quality system and its implementation.

NOTE 1—In some laboratories with limited staff, the quality manager may also be the technical manager. Whenever possible, the quality and technical manager positions should be filled independently by two individuals.

6. Quality System

6.1 The laboratory shall operate under an internal quality assurance program appropriate to the determination of lead taken from paint, dust, airborne particulates, and soil taken from and around buildings and related structures. The quality assurance program shall be designed to ensure the required degree of accuracy and precision of the laboratory's work and should include key elements of document control, sample control, data validation, and corrective action. The quality assurance program shall be documented in a quality manual or equivalent (for example, operations notebook) that shall be available for use by laboratory staff.

NOTE 2—The quality manual may consist of more than one document.

6.2 The quality manager shall have direct access to top management.

6.3 The quality manual shall contain information regarding the following:

6.3.1 The organizational structure of the laboratory which may be portrayed by organizational charts;

6.3.2 The operational and functional duties and services pertaining to quality so that concerned persons will know the extent and limitations of their responsibility;

6.3.3 General quality procedures, including staff training;

6.3.4 Specific quality procedures for each test, as appropriate;

6.3.5 Proficiency testing, use of reference materials for the determination of lead, and analytical quality control;

6.3.6 Arrangement for feedback and for documentation of corrective action whenever testing discrepancies are detected;

6.3.7 Procedures for dealing with technical complaints;

6.3.8 Arrangements for permitting departures from documented policies or standard test procedures; and

6.3.9 Procedures for correcting or amending original reports and other related documentation.

6.4 The laboratory shall arrange for audits of its activities at appropriate intervals to verify that its operations continue to comply with the requirements of the quality system. Such audits shall be performed by trained and qualified staff who are, wherever possible, independent of the activity to be audited. Where the audit findings cast doubt on the correctness or validity of the laboratory's calibration or test results, the laboratory shall take immediate corrective action and shall immediately notify, in writing, any client whose work may have been affected.

6.5 The quality system adopted to satisfy the requirements of this practice shall be reviewed periodically by the management to ensure its continuing suitability and effectiveness and to introduce any necessary changes or improvements.

6.6 All audit and review findings and any corrective actions that arise from them shall be documented. The quality manager shall ensure that these actions are discharged within the agreed-upon time scale.

6.7 The laboratory shall normally perform the lead testing that it contracts to undertake. If the laboratory subcontracts any part of the testing, the work shall be placed with another laboratory that has been accredited for the determination of lead in paint, dust, airborne particulates, and soil taken from and around buildings and related structures. The laboratory shall be able to demonstrate that its subcontractors are competent to perform the lead-determination services and comply with the same criteria of competence and, where applicable, the same regulations as the laboratory with respect to the work being subcontracted. The laboratory shall document and retain details of its investigation of the competence and compliance of its subcontractors.

7. Staff

7.1 The laboratory shall have sufficient personnel, having the necessary education, training, technical knowledge, and experience for their assigned functions regarding the determination of lead in paint, dust, airborne particulates, and soil taken from and around buildings and related structures.

7.2 The laboratory shall ensure that the training of its personnel is kept up-to-date.

7.3 Records on the relevant qualifications, training, skills, and experiences of the technical personnel shall be maintained by the laboratory.

8. Facilities and Equipment

8.1 *Measurements and Methods:*

8.1.1 The laboratory shall be furnished with all items of facilities and equipment for the correct performance of the tests for the determination of lead in paint, dust, airborne particulates, and soil taken from and around buildings and related