



Standard Terminology Relating to Lead in Buildings¹

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1. Scope

1.1 This terminology standard covers definitions for the following:

1.1.1 Terms that are commonly used in the field of management of lead hazards in facilities;

1.1.2 Architectural terms, particularly those associated with older wood-frame buildings; and,

1.1.3 Specialized terms that may be encountered by users in reports and notices that are generated during lead hazard management activities.

1.2 This terminology standard is supplementary to Terminology E631.

1.3 Definitions adopted or derived from other documents include the following:

1.3.1 Some of the definitions in this terminology standard are adopted as exact copies from other sources. The source is briefly identified at the right margin following the definition and fully identified in Section 2.

1.3.2 Some of the definitions in this terminology standard are adapted from other sources. Changes in these definitions were made only to clarify the meaning, to incorporate related terms that also are defined in this terminology standard, or to ensure that the revised definition is consistent with those for related terms. The source is briefly identified with the words “adapted” at the right margin following the definition, and is fully identified in Section 2.

1.4 Terms within the definitions that are shown in boldface are defined in this terminology standard.

1.5 This terminology standard excludes the following:

1.5.1 Terms with a common dictionary meaning, except in cases where there is a specialized definition within the field of lead hazard management.

1.5.2 Terms that are used only in individual ASTM standards in which they are defined adequately, whether formally or by the context in which they appear.

¹ This terminology is under the jurisdiction of ASTM Committee E06 on Performance of Buildings and is the direct responsibility of Subcommittee E06.23 on Lead Hazards Associated with Buildings.

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2. Referenced Documents

2.1 *ASTM Standards*:²

C186 Test Method for Heat of Hydration of Hydraulic Cement

C859 Terminology Relating to Nuclear Materials

D16 Terminology for Paint, Related Coatings, Materials, and Applications

D123 Terminology Relating to Textiles

D661 Test Method for Evaluating Degree of Cracking of Exterior Paints

D772 Test Method for Evaluating Degree of Flaking (Scaling) of Exterior Paints

D907 Terminology of Adhesives

D2864 Terminology Relating to Electrical Insulating Liquids and Gases

D4214 Test Methods for Evaluating the Degree of Chalking of Exterior Paint Films

D4538 Terminology Relating to Protective Coating and Lining Work for Power Generation Facilities

E7 Terminology Relating to Metallography

E131 Terminology Relating to Molecular Spectroscopy

E135 Terminology Relating to Analytical Chemistry for Metals, Ores, and Related Materials

E344 Terminology Relating to Thermometry and Hydrometry

E456 Terminology Relating to Quality and Statistics

E631 Terminology of Building Constructions

E856 Definitions of Terms and Abbreviations Relating to Physical and Chemical Characteristics of Refuse Derived Fuel (Withdrawn 2011)³

E1187 Terminology Relating to Conformity Assessment (Withdrawn 2006)³

E1227 Terminology for Chemical Analysis of Metals (Withdrawn 1991)³

E1553 Practice for Collection of Airborne Particulate Lead During Abatement and Construction Activities (Withdrawn 2002)³

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.

- E1613** Test Method for Determination of Lead by Inductively Coupled Plasma Atomic Emission Spectrometry (ICP-AES), Flame Atomic Absorption Spectrometry (FAAS), or Graphite Furnace Atomic Absorption Spectrometry (GFAAS) Techniques
- E1644** Practice for Hot Plate Digestion of Dust Wipe Samples for the Determination of Lead
- E1728** Practice for Collection of Settled Dust Samples Using Wipe Sampling Methods for Subsequent Lead Determination
- E1777** Guide for Prioritization of Data Needs for Pavement Management
- E1792** Specification for Wipe Sampling Materials for Lead in Surface Dust
- E1796** Guide for Selection and Use of Liquid Coating Encapsulation Products for Leaded Paint in Buildings
- E1908** Guide for Sample Selection of Debris Waste from a Building Renovation or Lead Abatement Project for Toxicity Characteristic Leaching Procedure (TCLP) Testing for Leachable Lead (Pb)
- E1914** Practice for Use of Terms Relating to the Development and Evaluation of Methods for Chemical Analysis
- E1979** Practice for Ultrasonic Extraction of Paint, Dust, Soil, and Air Samples for Subsequent Determination of Lead
- E2052** Guide for Evaluation, Management, and Control of Lead Hazards in Facilities (Withdrawn 2008)³
- E2239** Practice for Record Keeping and Record Preservation for Lead Hazard Activities
- E2255** Practice for Conducting Visual Assessments for Lead Hazards in Buildings (Withdrawn 2013)³
- E2271** Practice for Clearance Examinations Following Lead Hazard Reduction Activities in Dwellings, and in Other Child-Occupied Facilities
- F141** Terminology Relating to Resilient Floor Coverings
- F221** Terminology Relating to Carbon Paper and Inked Ribbon Products and Images Made Therefrom
- F1156** Terminology Relating to Product Counterfeit Protection Systems (Withdrawn 2001)³
- G40** Terminology Relating to Wear and Erosion
- IEEE/ASTM SI-10 Standard for Use of the International System of Units (SI), the Modernized Metric System
- 2.2 *Code of Federal Regulations*:⁴
- 40 CFR 261** Identification and Listing of Hazardous Waste
- 40 CFR 745.223** Lead-Based Paint Poisoning Prevention in Certain Residential Structures-Definitions
- 2.3 *ISO Standards*:⁵
- ISO 9000–2000** Quality Management Systems — Fundamentals and Vocabulary

3. Significance and Use

3.1 The purpose of this terminology standard is to help users understand and apply the large number of specialized terms

⁴ Available from U.S. Government Printing Office Superintendent of Documents, 732 N. Capitol St., NW, Mail Stop: SDE, Washington, DC 20401, <http://www.access.gpo.gov>.

⁵ Available from International Organization for Standardization (ISO), 1, ch. de la Voie-Creuse, CP 56, CH-1211 Geneva 20, Switzerland, <http://www.iso.org>.

used in connection with the management of lead hazards by providing a single, comprehensive, and consistent terminology.

3.1.1 This terminology standard includes some terms that may be encountered, but whose use is discouraged. They are included for clarification and in order to provide the user with preferred existing alternate terms.

3.1.2 Architectural terms for individual building components are included to promote consistency of usage and to help ensure that sampling locations are recorded with sufficient accuracy to allow independent confirmation of lead measurements, if necessary.

3.2 A discussion is attached to certain definitions to help make the definition clear or to show how the term and its definition are related to other terms.

3.3 Terms and definitions in this terminology standard are based upon laws, regulations, and practices in the United States.

3.3.1 Some of the definitions in this terminology standard are adopted verbatim or are adapted from definitions that are formally stated or implied in laws and regulations. They are not intended to replace the latter definitions. The user is responsible for understanding legal definitions and for ensuring that the legal obligations that are encompassed by them are fully satisfied.

3.3.2 Users in other countries should refer to applicable national, regional, and local laws, regulations, and practices.

4. Terminology

abrasion resistance (coatings)—ability of a coating to resist being worn away and to maintain its original appearance, integrity, and structure when subjected to rubbing, scraping, or wear.

accessible surface—interior or exterior surface (usually up to 5 ft (1.5 m) from floor or ground) that is accessible for a young child to mouth or chew. See also **chewable surface**.

accreditation, n—Official authorization, approval, or recognition accorded an individual or organization based upon specific qualifications. **E631**

accuracy, n—the closeness of the agreement between the result of a measurement and a true value of the quantity that is being measured. **adapted from draft ISO VIM, International Vocabulary of Basic and General Terms**

action level, n—a level of a contaminant in a medium at or above which activities to control the level are initiated.

DISCUSSION—The action level may be a maximum allowable level, as in the definition of lead-containing paint. In other cases, it is defined as below a maximum allowable level, and used as a warning to prevent the latter from being exceeded. An example is the action level in the OSHA lead standard.

administrative controls—Administrative measures that are used to control occupational exposures to hazards.

DISCUSSION—The most commonly-used administrative controls are job assignments and job rotations that are designed to limit the duration of worker exposure. Another administrative control is purchase control to ensure the use of materials and equipment which produce the least amount of hazard.

administrative removal—(*of workers*), temporary removal of workers from a job site prior to blood-lead levels reaching values requiring medical removal.

analyte, *n*—chemical or element that is the subject of the testing or measurement in a sampling and analytical procedure, for example, lead in paint.

anodic stripping voltammetry—an electroanalytical technique in which the concentration of a metal species analyte (such as lead) in a solution is determined by deposition (by reduction) on an electrode, then stripping from it (by oxidation). The peak electrical current is measured during stripping, and is proportional to the original metal concentration.

DISCUSSION—Commercial equipment is available to perform this method in the field as well as in fixed-site laboratories.

Apparent Lead Concentration (ALC)—The X-ray fluorescence (XRF) reading or average of more than one reading on a painted surface, not corrected for the substrate.

DISCUSSION—This value was used in a now-obsolete method of correcting XRF readings for substrate effect, and has been replaced by use of the Performance Characteristic Sheet.

atomic absorption—absorption of radiant energy by ground-state atoms.

DISCUSSION—Substances when dispersed as an atomic vapor will absorb characteristic radiations identical to those that the same substances can emit. This property is the basis for analysis by atomic absorption spectroscopy. **D2864**

baluster (picket), *n*—one of a series of closely-spaced upright members that support the handrail in a railing system. **E631**

bare soil, *n*—soil or sand not covered by grass, sod, other live ground covers, wood chips, gravel, artificial turf, or similar covering. **E2255**

baseboard, *n*—a molding covering the juncture of a wall and the adjoining floor.

batch—a group of field or quality control samples that are processed together using the same reagents and equipment. **E1553**

bias, *n*—systematic error of the indication of a measuring instrument. **E456**

biological monitoring—analysis of a person's blood or urine, or both, to determine the level of lead contamination in the body.

blank sample—unexposed specimen of the *medium* used in testing, such as a wipe or a filter, which is analyzed with other samples to determine whether samples are either (1) contaminated before collection (for example, in the field, or at the testing site), or are (2) contaminated after collection (for example, during transportation to the laboratory or in the laboratory), or both. Also called a *media blank*, or a *dummy specimen*.

blood-lead level (blood level)—concentration of lead in the blood, $1 \mu\text{mole/L} = 20.72 \mu\text{g/mL}$.

DISCUSSION—Blood lead levels are associated with the risk and severity of toxic effects.

calibration curve—graphical or mathematical representation of a relation between a measured parameter and a property of the standard for the substance under consideration. **C859**

calibration standard—solutions of known **analyte** concentration used to calibrate instruments. **E1613**

DISCUSSION—Calibration standards must be matrix matched to the acid content present in sample digestates or extracts and must be measured prior to analyzing samples.

certification—the process of testing and evaluating against certain specifications the competence of a person, organization, or other entity in performing a function or service, usually for a specified period of time. **HUD Guidelines**

Certified Reference Material (CRM)—a reference material accompanied by a certificate, one or more of whose property values are certified by a procedure that establishes its traceability to an accurate realization of the unit in which the property values are expressed. **E1644**

chalking, *n*—formation on a pigmented coating of a friable powder evolved from the film itself at or just beneath the surface. **D4214**

checking (coatings), *n*—phenomenon manifested in paint films by slight breaks in the film that do not penetrate to the underlying surface.

DISCUSSION—The break should be called a crack if the underlying surface is visible. Where precision is necessary in evaluating a paint film, checking may be described as visible (as seen by the naked eye) or as microscopic (as observed under a magnification of ten diameters).

chewable surface—surface easily accessible to children (usually up to five feet from the floor or ground), and likely to be chewed-on, such as window sills, balusters, and handrails. See **accessible surface**.

child-occupied facility—a facility constructed prior to 1978 that is visited regularly by the same child, six years of age or under, at least two different days within any week, for at least three hours per visit, six hours per week, and 60 hours per year. **40 CFR 745.223, adapted**

chipping resistance (coatings)—ability of a coating or layers of coatings to resist removal, usually in small pieces, resulting from impact by hard objects or from wear during service. **D16**

clearance area, *n*—work area and additional spaces outside the work area where lead contamination may have occurred during lead hazard control and other building maintenance or modification activities. **E2271**

DISCUSSION—The spaces outside the work area may include rooms connected to the work area, egress routes, waste storage areas, and grounds adjoining exterior work areas.

clearance examination, *n*—a process conducted after a lead hazard reduction activity, or other building maintenance and modification activities, to determine that no lead hazards remain in the area examined. **E2271**

clearance level, *n*—the amount of lead in samples collected during a clearance examination that is not to be equaled or exceeded so that a residential dwelling or child-occupied facility may be classified as adequately clean and safe for re-occupancy, as promulgated by authorities having jurisdiction. **E2271**

coating, *n*—a liquid or semiliquid, including but not limited to paint, varnish, or shellac, that dries or cures to form a protective or decorative finish after being applied as a thin layer. **D16**

Code of Federal Regulations (CFR)—basic component of the *Federal Register* publication system. The CFR is a codification of the regulations of the various Federal agencies.

common area, *n*—a portion of a building that is generally accessible to all occupants. Such an area may include, but is not limited to, hallways, stairways, laundry and recreational rooms, playgrounds, community centers, garages, and boundary fences. **40 CFR 745.223**

competence, *n*—demonstrated ability to apply knowledge and skills. **ISO 9000–2000 and E2239**

component, *n*—a building element using industrial products that are manufactured as independent units capable of being joined with other elements. **E631**

DISCUSSION—For lead hazard assessment, a component of a building is normally identified by form, function, and location and may include exterior walls, interior room (type) walls, an interior windowsill in a bathroom, and so forth.

component (of the waste)—each of those different and distinguishable materials that comprise the waste. **E1908**

component replacement (building)—an abatement method in which painted components with leaded paint are removed with minimal disturbance of the paint, and replaced with new components.

concentration, *n*—quantity of substance in a unit quantity of sample.

DISCUSSION—Lead in environmental media is expressed in SI units of mass concentration, for example, μg (micrograms) lead/g material, or in terms of loading, for example, μg lead/cm² of area (micrograms per square centimetre). Although the non-SI unit of micrograms per square foot is found in regulatory clearance testing of lead dust, its use is deprecated. (To convert from μg lead/ft² to μg lead/cm², divide by 929.11.)

conformity, *n*—fulfillment of a requirement. **ISO 9000–2000 and E2239**

containment, *n*—a physical barrier used to limit the spread of leaded dust and debris from a designated work area.

continuing calibration blank—a solution containing no analyte which is used to verify blank response and freedom from carryover. **E1613**

continuing calibration verification—a solution (or set of solutions) of known analyte concentration used to verify freedom from excessive instrumental drift; the concentration is to cover the range of a linear calibration curve. **adapted from E1613**

coring—method of collecting soil or paint samples that ensures that materials at each depth are collected proportionately, usually with a hollow cylindrical extraction device. **E1727**

cracking (coatings), *n*—phenomenon manifested in paint films by a break extending through to the surface painted. **D661**

DISCUSSION—Where this is difficult to determine, the break should be called a crack only if the underlying surface is visible. The use of a magnification of 10 diameters is recommended in cases where it is difficult to differentiate between cracking and checking.

data collection objective—a statement explaining the reasons that certain data is needed, the questions it is expected to answer, and the decisions that will be made on the basis of the data, that is used in developing sampling and analytical plans.

delamination, *n*—(1) the separation of one coating from another coat within a coating system, or from the substrate; (2) the separation of layers in a laminated material such as plywood because of failure of the adhesive. **D4538 and D907, respectively**

deleading—activities conducted to eliminate lead-based paint or lead-based paint hazards in public buildings, commercial buildings, or steel structures.

detection limit—the lowest level of an analyte that can be detected by an instrument or an analytical method.

DISCUSSION—There are different kinds of detection limits and it is important to know which one is being discussed.

instrumental detection limit—the lowest concentration at which the instrumentation can distinguish analyte content from the background generated by a minimal matrix. **E1613**

DISCUSSION—The IDL is the limit of performance of the analytical instrument and is given in units of mass per unit volume.

method detection limit—the minimum concentration of an analyte that, in a given matrix and with a specific method, has a 99 % probability of being identified, qualitatively or quantitatively measured, and reported to be greater than zero concentration. **E1613**

DISCUSSION—(1) The method detection limit is different for each matrix, and is given in units that are specific to the matrix. (2) The method detection limit is always greater than or equal to the instrument detection limit.

deteriorated paint—paint or other coating that is cracking, flaking, chipping, peeling, or otherwise damaged or delaminating from the substrate of a building component.

digestate—an acidified aqueous solution produced by digestion.

digestion—a high temperature sample preparation process that solubilizes targeted analytes that may be present in the sample, and results in an acidified aqueous solution called the digestate. **E1913**

DISCUSSION—Digestion normally entails the use of a hot plate or microwave oven for subjecting the acidified sample solution to high temperatures. Digestion is a type of **extraction**.

discipline, *n*—one of the specific types or categories of lead-based paint activities defined in applicable federal,

state, or local regulations for which individuals may receive training from accredited training programs and become certified.

40 CFR 745.223, adapted

dust-lead hazard, *n*—surface dust in a building that contains, or is presumed to contain, a mass-per-area concentration of lead equal to or exceeding limits set in regulations promulgated by authorities having jurisdiction.

dust-wipe sample—a sample of surface dust collected on a wipe. **E1644**

dwelling unit—unit providing complete independent living facilities for one or more persons, including permanent provisions for living, sleeping, eating, cooking, and sanitation. **E631**

EBL—see **elevated blood lead level**.

elevated blood lead level (EBL)—lead content in blood that exceeds the safe level established by regulation/local jurisdiction.

encapsulation, *n*—the application of an encapsulant. An encapsulant or encapsulation product is a substance that forms a barrier between lead-based paint and the environment using a liquid-applied coating (with or without reinforcement materials) or an adhesively bonded covering material. **40 CFR 745.223, adapted**

DISCUSSION—An encapsulant is intended to have a life expectancy of at least 20 years. Wallpaper and contact paper are not considered to be encapsulants.

DISCUSSION—Encapsulation is one of the four principal abatement methods.

enclosure, *n*—the use of rigid, durable construction materials that are mechanically fastened to the substrate in order to act as a dust-tight barrier between lead-based paint and the environment. **40 CFR 745.223, adapted**

DISCUSSION—Enclosure is one of the four principal abatement methods.

engineering controls—measures other than respiratory protection or administrative controls that are implemented at the work site to contain, control, or otherwise reduce exposure to lead-contaminated dust and debris, usually in the occupational health setting. The measures include process and product substitution, isolation, and ventilation. **HUD Guidelines, OSHA**

evaluation, *n*—for lead hazards, a general term to include risk (hazard) assessment, visual assessment, clearance examination, paint inspection, and the results of testing for lead. **E2239**

ex situ—a term used to describe work performed after removal to another location or away from a facility.

extraction, *n*—the dissolution of target analytes from a solid matrix into a liquid form. **E1979**

DISCUSSION—Digestion is an example of an extraction process. Other extraction processes are ultrasonic extraction and leaching.

facility, *n*—a physical setting used to serve a specific purpose.

DISCUSSION—As used in lead hazard management activities, a facility may be a part of a building, a whole building, or a group of buildings with or without surrounding property, or a non-building setting such as a playground.

field blank—blank sample prepared at the field sampling location.

field operation laboratory—a laboratory that uses portable technology to provide analytical services in the field near the sampling site.

fixed-site laboratory—a laboratory that is located in improved real estate such as a building or similar structure.

flaking (scaling), *n*—phenomenon manifested in paint films by the actual detachment of pieces of the film itself either from its substrate or from paint previously applied. **D772**

DISCUSSION—Flaking (scaling) is generally preceded by cracking or checking or blistering, and is the result of loss of adhesion, usually due to stress-strain factors coming into play.

friction surface, *n*—an interior or exterior surface that is subject to abrasion or friction, including, but not limited to, certain surfaces of windows, floors, and stairs. **E2255**

glazing, *n*—material installed in a window sash, ventilator, or panel such as glass or plastic. **E631**

hazardous waste—liquid or solid waste, or combination of solid wastes, which because of its quantity, concentration, or physical, chemical, or infectious characteristics is capable of: (1) causing, or significantly contributing to an increase in mortality or to an increase in serious irreversible, or incapacitating reversible, illness; or (2) posing a substantial present or potential hazard to human health or to the environment when improperly treated, stored, transported, or disposed of, or otherwise managed.

heat gun—blower-equipped apparatus that emits heat with sufficient intensity to soften dried paint to permit scraping from the surface.

HEPA filter—see **high-efficiency particulate air filter**.

high-efficiency particulate air (HEPA) filter—filter capable of separating out particles of 0.3 μm or greater from a body of air at 99.97 % efficiency or greater. See also.

impact surface, *n*—an interior or exterior surface that is subject to damage by repeated sudden force, such as certain parts of doorframes. **E2255**

industrial hygienist—person certified by the American Board of Industrial Hygiene, or an industrial hygienist in training, or a person with equivalent education or experience or both.

initial calibration blank—a solution containing no analyte that is used for initial calibration and zeroing of the instrument response.

DISCUSSION—An initial calibration blank is an **instrumental QC standard**. **E1613**

initial calibration verification—a solution (or set of solutions) of known analyte concentration used to verify calibration standard levels; the concentration of analyte is to be near the mid-range of the working range of the linear curve

that is made from a stock solution having a different manufacturer or manufactured lot identification than the calibration standards. **E1613**

in situ—a term used to describe work performed in place or at a facility.

instrumental QC standard—a solution (or set of solutions) of known analyte concentration that provides information on measurement performance during the instrumental analysis portion of the overall analyte measurement process. **E1613**

DISCUSSION—instrumental QC standards include **initial calibration blanks**, **initial calibration verifications**, **continuing calibration blanks**, **continuing calibration verifications**, and **interference check standards**.

interference check standard, *n*—a solution (or set of solutions) of known **analyte** concentration used to verify an accurate analyte response in the presence of possible spectral interferences from other analytes that may be present in samples. **E1613**

interim controls—a set of measures designed to temporarily reduce human exposure or likely exposure to lead-based paint hazards, including specialized cleaning, repairs, maintenance, painting, temporary containment, ongoing monitoring of lead-based paint hazards or potential hazards, and the establishment and operation of management and resident education programs. **40 CFR 745.223**

lead-based paint, *n*—a dried paint film or other surface coating that contains lead in excess of the limits set by authorities having jurisdiction.

DISCUSSION—In the United States, lead-based paint is defined by federal authorities having jurisdiction as paint or other coatings having a lead content exceeding 1 mg/cm² or a lead concentration exceeding 0.5 % by mass.

lead-based paint activities—in the case of target housing and child-occupied facilities, inspection, risk assessment, and abatement. **40 CFR 745.223**

lead-based paint inspection, *n*—a surface-by-surface investigation to determine the presence of lead-based paint including a report explaining the results of the investigation. **E2255**

lead-containing paint, *n*—paint or other similar surface-coating materials containing lead in excess of 0.06 % by mass of the total nonvolatile content of the paint, or by the mass of the dried paint film.

leaded dust hazard, *n*—a condition that might result in adverse human health effects due to lead in surface dust.

DISCUSSION—Authorities having jurisdiction may issue guidance or promulgate requirements defining the minimum mass per area content of lead in dust in that is considered to constitute a hazard.

leaded paint—paint or other coatings containing lead compounds. See **lead-containing paint**.

leaded paint characterization—a procedure for determining the presence of lead in painted surfaces that are expected to be disturbed by planned work. **E2052**

DISCUSSION—The difference between leaded paint characterization using an XRF and a lead-based paint inspection is that in characterization, “negative” results are followed by quantitative analysis and “inconclusive” results are treated as “positive.”

leaded paint hazard, *n*—a condition that might result in adverse human health effects due to lead in deteriorated paint on all building surfaces, lead in paint on chewable surfaces, impact surfaces, or dust-producing friction surfaces.

DISCUSSION—Levels of lead in deteriorated paint, lead in paint on chewable surfaces, dust-producing friction surfaces, and impact surfaces that might adversely affect human health may be stated in requirements promulgated by authorities having jurisdiction.

leaded soil, *n*—bare soil containing lead compounds at potentially hazardous concentrations.

leaded soil hazard, *n*—a condition that might result in adverse human health effects due to lead in bare soil.

DISCUSSION—Authorities having jurisdiction may issue guidance or promulgate requirements defining the minimum amount of lead in soil by percent by mass that is considered to constitute a hazard.

lead-free (deprecated)—term used to describe a dwelling that contains no **lead-based paint**, lead-contaminated dust, or lead-contaminated soil. Use of this term is discouraged because **leaded paint** may be present, and there is normally a small amount of lead in any paint, dust, and soil.

lead hazard, *n*—a leaded-dust hazard, leaded-soil hazard, leaded-paint hazard, or any other condition that may cause exposure to lead that may result in adverse human health effects.

lead hazard activities, *n*—procedures, measures, and actions including **abatement**, **clearance examination**, control, inspection, maintenance, management, quality systems, reduction, and risk assessment pertaining to lead hazards in buildings and associated grounds. **E2255**

lead hazard assessment—investigation of an assessed unit conducted to determine and report the location, type, severity of lead hazards which are accessible to children. **E2115**

lead hazard control—activities intended to control exposures to lead hazards and actual or potential sources of lead hazard, including **abatement** and in-place management.

lead hazard management—activities intended to characterize the presence of lead hazards and actual or potential sources of lead hazards in a defined facility or group of facilities, develop a specific plan to control and eliminate lead hazards based on these findings, and implement a program based on this plan. **adapted from E2052**

lead hazard reduction, *n*—any measure that results in a lessening of the number or extent, or both, of lead hazards. **E2271**

lead hazard screen—a limited risk assessment activity that involves limited paint and dust sampling as described in applicable Federal, state, or local regulations. **40 CFR 745.223**

lead paint (deprecated)—a term that is sometimes used as an alternative to **lead-based paint**. Use of this term is discouraged because it is unclear what level of lead it refers to.

lead screen (deprecated)—a term sometimes used for **lead hazard screen**. Its use is discouraged because there are several alternatives in use, and this one is particularly unclear.

maintenance, *n*—work performed to keep facilities in good condition. **E2052**

mass concentration—the mass of a specified component or phase, per unit mass or unit volume of total. **G40**

DISCUSSION—Common examples in lead work are lead levels in paint or soil expressed in percent by mass or in parts per million.

mass loading—lead concentration in units of mass per unit area.

DISCUSSION—Common examples in lead work are lead levels in paint expressed as milligrams per square centimeter, or lead levels in surface dust expressed as micrograms per square metre (or square foot).

matrix—the type of material such as dust, paint, or soil, in which lead in a sample is contained.

matrix effect—a change in an instrument reading of an analyte level caused by materials in the matrix other than the analyte.

MD—State of Maryland.

mean (value)—the arithmetic mean, unless stated to be the geometric mean.

medical removal (of workers)—temporary removal of workers from a job site due to elevated blood-lead levels as defined in HUD interim guidelines. Compare **administrative removal**.

measurement, *n*—act of quantifying a property or dimension. **D123**

molding, *n*—a piece of trim, typically wood, milled with a decorative shape or profile.

monitoring, *n*—surveillance to determine (1) whether known or suspected leaded paint is deteriorating; (2) that lead hazard control methods remain effective; (3) whether structural problems threaten the integrity of lead hazard controls; and (4) whether dust lead levels will remain below applicable standards. Monitoring includes both visual assessments and **reevaluations**. **based on HUD Guidelines**

multi-family dwelling, *n*—a structure that contains more than one separate residential unit, which is used or occupied, or is intended to be used or occupied, in whole or in part, as the home or residence of one or more persons. **40 CFR 745.223**

National Lead Laboratory Accreditation Program (NLLAP)—a program mandated by Title X, Section 405b in which EPA confers recognition of a laboratory's ability to meet strict quality system requirements in a program conducted by accrediting bodies within a memorandum of understanding with EPA.

DISCUSSION—40 CFR 745.227 requires that lead samples collected pursuant to EPA work practice standards be analyzed at a recognized laboratory. Recognition is granted for each matrix, so some laboratories may not be recognized for all three of dust, soil, and lead.

needle gun—a power tool that removes paint by the impact of a set of thin metal rods.

nonconformity, *n*—nonfulfillment of a requirement. **ISO 9000–2000 and E2239**

non-spiked sample—a portion of a homogenized sample that was targeted for the addition of analyte but is not fortified with all the target analytes before sample preparation.

DISCUSSION—Analysis results for this sample are used to correct for native analyte levels in spiked samples and spiked duplicate samples.

objective evidence, *n*—data supporting the existence or verity of something.

DISCUSSION—Objective evidence may be obtained through observation, test, or other means. **ISO 9000–2000 and E2239**

observation, *n*—a judgement that is based on what one sees while conducting lead hazard activities and that is substantiated by **objective evidence**. **E2239**

painted debris, *n*—for **clearance examination**, pieces of construction waste completely or partially coated with paint. **E2271**

painting history, *n*—a record of all paint layers that have been applied to a building **component** as determined by either documentation or professional judgement.

paint-lead hazard, *n*—a source of adverse effects on human health due to the presence of lead in deteriorated paint on all building surfaces or lead in paint on chewable surfaces, friction surfaces resulting in dust lead levels of adjacent horizontal surfaces above regulatory dust-lead values, or impacted surfaces.

patch test—a test to determine whether a proposed liquid encapsulant is suitable for a particular surface or use that is performed by applying a small area of it to the surface, letting it cure, and testing it for adhesion.

DISCUSSION—The ASTM guide for performing patch tests is Guide **E1796**.

Permissible Exposure Limit—an occupational exposure limit, such as for lead, that is established and enforced by an authority having jurisdiction.

DISCUSSION—For example, U.S. Occupational Safety and Health Administration established such limits.

personal air sample—an air sample that is collected within the personal breathing zone of a worker.

DISCUSSION—The personal breathing zone is a hemispherical zone with a radius of approximately 150 to 225 mm centered at the nose.

DISCUSSION—PPE is used only when feasible engineering, administrative and work practice controls have been applied and have failed to provide adequate worker protection.

personal protective equipment—equipment for protecting the eyes, face, head, or extremities of workers from hazards, including protective clothing, respiratory devices, and protective shields. **based on HUD Guidelines, OSHA**

NOTE 1—PPE should be used only where feasible engineering controls, administrative controls, and work practice controls have been applied and have failed to reduce the hazard.

precision—the closeness of agreement between repetitive independent test results obtained under prescribed conditions (see Terminology **E456**).

procedure, n—specified way to carry out an activity or process. **ISO 9000–2000 and E2239**

DISCUSSION—In many cases, procedures are documented (for example, quality system procedures). When a procedure is documented, the term “written procedure” or “documented procedure” is frequently used. A written or documented procedure usually contains the purposes and scope of an activity; what shall be done and by whom; when, where, and how it shall be done; what materials, equipment, and how many documents shall be used; and how it shall be controlled and recorded.

professional judgement, n—the process of formulating a decision based on evaluating data, information, observations, or a combination of the three, using the professional’s training and experience, and made in light of common industry practice.

DISCUSSION—For **clearance examinations**, decisions consider where dust wipe and soil samples should be taken. The decisions take into account the type of lead hazard reduction activity conducted prior to the clearance examination and the visual observations made of the clearance area.

quality system—the organizational structure, responsibilities, procedures, activities, capabilities, and resources that together aim to ensure that services satisfy date requirements. **generalized from E1187**

quantitation limit—an instrumental measurement value that is used to provide a concentration limit for confidently reporting quantitative analysis data for a give analytical method. **E1613**

DISCUSSION—There are different quantitation limits, as for detection limits, and it is important to know which is being discussed.

random sample, n—a sample selected from a population using **random sampling**. **E2271**

random sampling—technique for selecting a sample of *n* elements from a population of elements in such a way that each combination of *n* elements has the same probability of being selected. **C859**

range, n—the region between the limits within which a quantity can be measured, which is expressed by stating the lower and upper limits. **adapted from E344**

reading, n—numerical value obtained from a digital display or indicated on a scale or dial of an apparatus or instrument. **E1227**

read-through, n—an effect observed on thin surfaces coated with leaded paint on the far side that falsely increases an XRF measurement on the near side.

reagent—a chemical used to react with another chemical, often to confirm or deny the presence of the second chemical. **F1156**

recognized laboratory—a laboratory recognized under an Accreditation Program.

DISCUSSION—For example, in the United States of America, laboratories may become recognized for lead analysis under the **National Lead Laboratory Accreditation Program**.

record, n—a document stating results achieved or providing evidence of activities. **E2239**

reevaluation—a visual evaluation/risk assessment that is performed according to a Standard Reevaluation Schedule. **HUD Guidelines**

reference material—for lead hazard control, a paint, dust, soil or air particulate material having a known lead level as certified by the material supplier. See **Certified Reference Material**.

remodel, v—to replace or improve a building or its parts. **E631**

repair, v—to replace or correct damaged or faulty components or subsystems of a building to maintain operating capability **E631**

reporting limit, n—the lowest level of an **analyte** in a sample that an individual laboratory can confidently report for a particular **matrix**.

representative sample—sample of a universe or whole (for example, waste sample pile, lagoon, ground water, or waste stream), selected in a random sampling process, which represents the total properties in the universe or whole.

requirement, n—need or expectation that is generally implied or obligatory. **ISO 9000–2000 and E2239**

residential dwelling—(1) a detached single family **dwelling unit**, including attached structures such as porches and stoops; or (2) a single family dwelling unit in a structure that contains more than one separate residential dwelling unit, which is used or occupied, or intended to be used or occupied, in whole or in part, as the home or residence of one or more persons. **40 CFR 745.223**

risk assessment—(1) an on-site investigation to determine the existence, nature, severity, and location of lead-based paint hazards; (2) the provision of a report by the individual or firm conducting the risk assessment, explaining the results of the investigation and options for reducing lead-based paint hazards. **40 CFR 745.223**

risk assessment screen (deprecated)—alternative form of **lead hazard screen**. Use of this term is discouraged in order to minimize confusion.

risk assessor, certified—an individual who has been trained by an accredited training program to conduct risk assessments or clearance examinations, or both, and certified under regulations promulgated by authorities having jurisdiction.

DISCUSSION—For example, in the United States, see 40 CFR 745.226.

risk screen (deprecated)—alternative term for **lead hazard screen**. Use of this term is discouraged in order to minimize confusion.

room equivalent, n—an identifiable partitioned-interior area of a building that is not usually considered as a room, such as a hallway, stairway, lobby, or vestibule. **E2271**

sample, *n*—a group of items, observations, test results, or portions of material taken from a large collection of items, observations test results, or quantities of material, which serves to provide information that may be used as a basis for making a decision on the larger collection or quantity.

sample of the waste, *n*—for waste sampling of building materials, a collection of the **components of the waste** assembled in proportion to their contribution to the total volume of the waste. **E1908**

sampling location, *n*—a specific area within a **sampling site** that is subjected to sample collection. **E1728**

DISCUSSION—Multiple sampling locations are commonly designated for a single **sampling site**.

sampling site, *n*—a local place that contains the sampling locations. **E2271**

sampling site, *n*—a sampling site is generally limited to an area that is easily covered by walking, for example, an apartment building or single-family residence. **E1728**

sampling template (dust), *n*—a tool used to isolate a known area of a surface for dust wipe sampling.

sash, *n*—single frame in a door or window that holds one or more lites (panes) of glass. See **window sash**.

scaling—see **flaking**.

SEL—see **substrate equivalent lead concentration**.

settled dust, *n*—particulate matter that has precipitated onto a surface. **E2271**

sodium rhodizonate method—*for lead detection*, use of a dilute solution of sodium rhodizonate to spot test a painted surface qualitatively for the presence of lead.

sodium sulfide method—*for lead detection*, use of a dilute solution of sodium sulfide to spot test a painted surface qualitatively for the presence of lead.

small quantity—see **hazardous-waste small quantity generator**.

soil-lead hazard, *n*—**bare soil** on the property surrounding the building that contains or is presumed to contain lead at a concentration equal to or exceeding limits set in regulations promulgated by authorities having jurisdiction. **E2255**

specimen—see **test specimen**.

spot test, *n*—the application of reagent solution to a dry paint film sample, paint chip, paint powder, or painted surface and the subsequent observation for the presence or absence of the characteristic color change. **E1753**

spot test kit, *n*—equipment (for example, a cutting tool, adsorbent applicators, if necessary) and chemicals (for example, sulfide or rhodizonate spot test reagents and any extraction solutions needed) assembled for use during spot testing for lead. **E1753**

standard deviation (in statistics)—a measure of the precision of the readings, the average deviation of the deviations from the mean value.

DISCUSSION—The smaller the standard deviation, the more precise the analysis, and the less variation there is when an analysis is repeated. The standard deviation is calculated by first obtaining the mean (arithmetic average) of all of the readings. A formula is then used to calculate how much the values vary from the mean (standard deviation = the square root of the arithmetic average of the squares of the deviations from the mean). Many hand calculators have an automatic standard deviation function.

substandard dwelling—dwelling or residence that does not meet minimum local housing codes, or is unsafe because of violation of fire, safety, or health codes.

substrate—unfinished building-material surface to which finishes are applied. Examples include wood, plaster, drywall, masonry, and metal.

substrate equivalent lead concentration (SEL)—average of at least three XRF analyzer readings on a surface from which the coating has been removed.

surface dust, *n*—particulate matter on a surface. **E2271**

DISCUSSION—For lead hazard activities, the particulate matter may be transported to the surface by various means such as through the air or by tracking or be produced by deterioration of the surface.

test, *n*—critical examination of the quality, composition, or properties of a material, usually involving standardized test procedures.

test specimen—portion of a test unit needed to obtain a single test determination. **E456**

DISCUSSION—When used for a physical test, this is sometimes called *test piece*. For a chemical test, it is sometimes called *test portion* or *test sample*. For optical and other tests, it is also sometimes called *test sample*. In interlaboratory evaluation of test methods and other statistical procedures, it is best to reserve the word **sample** for the whole amount of material involved and not the individual test specimens, pieces, or portions being tested.

toxicity characteristic leaching procedure (TCLP)—a mild laboratory extraction procedure designed to determine the mobility of organic and inorganic constituents present in liquid, solid, and multiphasic wastes.

DISCUSSION—The Environmental Protection Agency TCLP procedure is provided in 40 CFR 261, Appendix II.

traceability, *n*—ability to trace the history, application, or location of that which is under consideration. **ISO 9000–2000 and E2239**

treatment—see **hazardous-waste treatment**.

TSP—tri-sodium phosphate.

unit—see **dwelling unit**.

verification—see **calibrate**.

vinyl composition tile, *n*—a resilient floor covering composed of binder, fillers, and pigments. The binder consists of one or more resins of poly(vinyl chloride), or vinyl chloride copolymers, or both, compounded with suitable plasticizers and stabilizers. Other polymeric resins may be incorporated as part of the binder. **E1792, F141**

visual inspection for clearance testing—the visual examination of a residential dwelling or a child-occupied facility

following an abatement to determine whether or not the abatement has been successfully completed. **40 CFR 745.223**

visual inspection for risk assessment—the visual examination of a residential dwelling or a child-occupied facility to determine the existence of deteriorated lead-based paint or other potential sources of lead-based paint hazards. **40 CFR 745.223**

waste, n—for waste sampling of building materials, material resulting from a demolition, renovation, or lead hazard control project that is or will be directed for disposal. **E1908**

waste stream, n—the total flow of waste from a demolition, renovation, or lead abatement project. **E1908**

wet scraping, n—removal of leaded paint by hand scraping while keeping the surface wetted to minimize the generation of dust.

window sash—assembly of one or more lites (or panes) of glazing, encompassed by surrounding edge members, which when operable, slides in the plane of the window. **E631**

window stool—flat, horizontal molding fitted over the sill, on the window interior, between jambs, that comes in contact with the bottom rail of the (lower) operating sash and the window sill.

wipe, n—a disposable towellette that is moistened with a wetting agent. **E1792**

work area, n—the interior or exterior space where lead hazard control or other building maintenance or modification activities are performed.

DISCUSSION—The interior work space may include (1) a portion of a room, an entire room, or room equivalent or (2) portions of multiple rooms, multiple rooms or room equivalents, dependent upon the extent or location, or both of the lead hazard control activity. The exterior work space may include (1) a portion of a building façade or an entire building façade and (2) bare soil.

X-ray fluorescence instrument, n—a measurement device that determines metal contents of materials using the physics of the interaction of gamma rays (from the excitation source) with electrons in target metals (for example, lead) in the material and the resulting fluorescence.

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