

Glossary

Notes:

- ◆ These definitions are for use within the scope of these that is, for lead-based paint hazard evaluation and control, and are not necessarily generic definitions applicable outside of this scope.
- ◆ For Federal regulatory definitions, please see:
 - CPSC’s Lead-Containing Paint regulation (16 CFR 1303);
 - EPA’s Lead-Based Paint Abatement; Renovation, Repair and Painting; and Pre-Renovation Education regulations (40 CFR Part 745);
 - HUD’s Lead Disclosure Rule and Lead Safe Housing Rule (24 CFR Part 35); and
 - OSHA’s Lead in Construction standard (29 CFR 1926.62).

AAALA: American Association for Laboratory Accreditation. Also known as **A2LA**.

Abatement: A measure or set of measures designed to permanently eliminate lead-based paint hazards or lead-based paint. Abatement strategies include the removal of lead-based paint, enclosure, encapsulation, replacement of building components coated with lead-based paint, removal of lead-contaminated dust, and removal of lead-contaminated soil or overlaying of soil with a durable covering such as asphalt (grass and sod are considered interim control measures). All of these strategies require preparation; cleanup; waste disposal; post-abatement clearance testing; recordkeeping; and, if applicable, monitoring. (For full EPA definition, see 40 CFR 745.223). See, also, **Interim controls**.

Abrasion resistance: Resistance of the paint to wear by rubbing or friction; related to both toughness and gloss.

Accreditation: A formal recognition that an organization, such as a training provider, is competent to carry out specific tasks or types of tests.

Accredited training provider: A training provider who meets the standards established by EPA (or an EPA-authorized State or Tribe) for the training of risk assessors, inspectors, abatement supervisors, abatement workers, renovators, and dust sampling technicians.

Accuracy: The degree of agreement between an observed value and an accepted reference value (a “true” value); a data quality indicator. Accuracy includes a combination of random errors (precision) and systematic errors (bias) due to sampling and analysis. See also the related, but different, term **Precision**.

Acrylic: A synthetic resin used in high performance waterborne coatings; a coating whose binder contains acrylic resins.

Adhesion: The ability of dry paint or other coating to attach to a surface and remain fixed on it without blistering, flaking, cracking, or being susceptible to removal by tape.

Administrative removal: The temporary removal of workers from the job to prevent the concentration of lead in their blood from reaching levels requiring medical removal.

AIHA: American Industrial Hygiene Association.

ALC: see **Apparent Lead Concentration**.

Aliquot: see **Subsample**.

Alkali: A chemical, such as lye, soda, lime, etc., that will neutralize an acid. Oil paint films can be destroyed by alkalis. Some paint removal products contain alkaline substances.

Alkyd: Synthetic resin modified with oil; coating that contains alkyd resins in the binder.

Apparent Lead Concentration (ALC): The x-ray fluorescence (XRF) reading or average of more than one reading on a painted surface. See also **XRF analyzer**, **Substrate Equivalent Lead (SEL)**, and **Corrected Lead Concentration (CLC)**.

Arithmetic mean: Average.

Bare soil: Soil not covered with grass, sod, some other similar vegetation, or paving, including the sand in sandboxes.

Bias: A systematic error in the measurement process. For XRF readings, one source of bias is the substrate effect. See also **Substrate effect** and **XRF analyzer**.

Binder: Solid ingredients in a coating that hold the pigment particles in suspension and bind them to the substrate. Binders used in paints and coatings include oil, alkyd, acrylic, latex, and epoxy. The nature and amount of binder determines many of the coating's performance properties – wash ability, toughness, adhesion, gloss, etc. See, also, **Pigment**.

Biological monitoring: The analysis of blood, urine, or both to determine the level of lead contamination in the body. Blood lead levels are expressed in micrograms of lead per deciliter (one-tenth of a liter) of blood, or µg/dL. They are also expressed in micromoles per liter (µmol/L).

Blank: An unexposed sample of the medium being used for testing (i.e., wipe or filter) that is analyzed to determine if the medium has been contaminated with lead (e.g., at the factory or during transport).

Blind sample: A sample submitted for analysis that has a known composition and identity that is not known to the analyst; used to test the analyst's or laboratory's proficiency in conducting measurements. See, also, the related term **Spiked sample**.

Building component: Any element of a building that may be painted or have dust on its surface, e.g., walls, stair treads, floors, railings, doors, windowsills, etc.

Building component replacement: see **Replacement**.

Cementitious material: A material that is mixed with water, either with or without aggregate, to provide the plasticity, cohesion, and adhesion necessary for the placement and formation of a rigid mass (ASTM Standard C 11).

Centimeter: see **cm**.

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.

Certified: The designation for contractors who have completed training and other requirements to allow them to safely undertake risk assessments, inspections, abatement or renovation. Risk assessors, inspectors, abatement contractors and renovation contractors should be certified (and licensed, if applicable) by the appropriate local, State or Federal agency.

Certified Industrial Hygienist (CIH): A person who has passed the 2-day certification exam of the American Board of Industrial Hygiene, and who has at least 4 years of experience in industrial hygiene and a graduate degree or a total of 5 years of experience. See, also, **Industrial hygienist**.

Certified reference material (CRM): Reference material that has at least one of its property values established by a technically valid procedure and is accompanied by or traceable to a certificate or other documentation issued by a certifying body. See, also, **Standard reference material**.

Certified Renovator: An individual who has successfully completed a renovator course accredited by EPA or an EPA-authorized State or Tribal program.

CFR: see **Code of Federal Regulations**.

Chalking: The photo-oxidation of paint binders - usually due to weathering - that causes a powder to form on the film surface.

Chewable surface: An interior or exterior surface painted with lead-based paint that a young child can mouth or chew. A chewable surface is the same as an "accessible surface" as defined in 42 U.S.C. 4851b(2). Hard metal substrates and other materials that cannot be dented by the bite of a young child are not considered chewable.

Chewed surface: Any painted surface that shows evidence of having been chewed or mouthed by a young child. A chewed surface is usually a protruding, horizontal part of a building, such as an interior windowsill. See, also, **Chewable surface**.

CLC: see **Corrected Lead Concentration (CLC)**

Cleaning: The process of using a vacuum and wet cleaning agents to remove leaded dust; the process includes the removal of bulk debris from the work area.

Cleaning Verification: The procedure required by EPA under its Renovation, Repair and Painting regulation after most renovations that disturb known or presumed lead-based paint. A certified renovator must perform a visual inspection to determine whether dust, debris or residue is still present. If so, these must be removed by re-cleaning and another visual inspection must be performed. After a successful visual inspection, the certified renovator must verify that each windowsill, uncarpeted floor and countertop in the work area has been adequately cleaned by wiping them with wet disposable cleaning cloths that are damp to the touch. If a cloth matches or is lighter than an EPA cleaning verification card, the surface passes; if not, it has to be recleaned and reverified. For more details, see Appendix 6 and 40 CFR 745.85(b).

Clearance examination: Visual examination and collection of lead dust samples by an inspector or risk assessor, or, in some circumstances, a sampling technician, and analysis by a EPA-recognized laboratory upon completion of an abatement project, interim control intervention, maintenance or renovation job that disturbs lead-based paint (or paint presumed to be lead-based.) For abatement projects, the clearance examination is performed to ensure that lead exposure levels do not exceed clearance standards established by the EPA at 40 CFR 745.227(e) (8)(viii); HUD's dust-lead standards for clearance after interim control projects are found at 24 CFR 35.1320(b)(2)(i).

Clearance examiner: A person who conducts clearance examinations following lead-based paint hazard control and cleanup work, usually a certified risk assessor, certified inspector or sampling technician.

cm: Centimeter; 1/100 of a meter.

Code of Federal Regulations (CFR): The codification of the regulations of Federal agencies. The regulations are published in the *Federal Register*. See, also, (FR).

Cohesion: Ability of a substance to adhere to itself; internal adhesion; the force holding a substance together.

Common area: A room or area that is accessible to residents of more than one dwelling unit (e.g., hallways or lobbies); in general, any area not kept locked.

Competent person: As defined in the OSHA Lead Construction Standard (29 CFR 1926.62), a person who is capable of identifying or predicting hazardous working conditions and work areas, and who has authorization to take prompt, corrective measures to eliminate the hazards. A competent person may also be a risk assessor, inspector, abatement project supervisor or certified renovator; however, certification on its own does not give a person the authority to take corrective action, which a competent person must have.

Compliance plan: A document that describes the types of tasks, workers, protective measures, and tools and other materials that may be employed in lead-based paint hazard control to comply with the OSHA Lead Exposure in Construction standard.

Composite sample: A single sample made up of individual subsamples. Analysis of a composite sample produces the arithmetic mean of all subsamples.

Construction and Demolition Landfill (C&D): Landfills that only accept waste from construction and demolition activities. Some states and local governments permit residential LBP waste to be accepted as well.

Containment: A process to protect workers and the environment by controlling exposures to the lead-contaminated dust and debris created during abatement, interim controls or lead-safe renovation. See, also, **Worksite preparation level**.

Contingency plan: A document that describes an organized, planned, and coordinated course of action to be taken during any event that threatens human health or the environment, such as a fire, explosion, or the release of hazardous waste or its constituents from a treatment, storage, or disposal facility.

Corrected Lead Concentration (CLC): The absolute difference between the Apparent Lead Concentration and the Substrate Equivalent Lead. See, also, **Apparent Lead Concentration (ALC)** and **Substrate Equivalent Lead (SEL)**.

Deciliter (dL): one tenth of a liter.

Detection limit: The minimum amount of a substance that can be reliably measured by a particular method.

Deteriorated paint: Any paint coating on a damaged or deteriorated surface or fixture, or any interior or exterior lead-based paint that is peeling, chipping, blistering, flaking, worn, chalking, alligating, cracking, or otherwise becoming separated from the substrate.

Digestion blank: A mixture of the reagents used for digesting of paint, soil, or dust matrixes but without the matrix. The blank undergoes all the steps of the analysis, starting with digestion. The blank is used to evaluate the contamination process from a laboratory.

Direct-reading XRF: An analyzer that provides the operator with a display of lead concentrations calculated from the lead K shell X ray intensity without a graphic of the spectrum usually in mg/cm² (milligrams of lead per square centimeter of painted surface area). See, also, **XRF analyzer**.

Disposal (of waste): The discharge, deposit, injection, dumping, spilling, leaking, or placement of solid or liquid waste on land or in water so that none of its constituents can pollute the environment by being emitted into the air or discharged into a body of water, including groundwater.

Disposal facility: A facility or part of one in which waste is placed on land or in water to remain there after the facility closes.

Doormat: see **Walkoff mat**.

Dripline/foundation area: The area within 3 feet out from the building wall and surrounding the perimeter of a building.

Dust-lead hazard: Surface dust in residences that contains an area or mass concentration of lead equal to or in excess of the standard established by the EPA under Title IV of the Toxic Substances Control Act. EPA standards for dust-lead hazards, which are based on wipe samples, are published at 40 CFR 745.65(b); as of the publication of this edition of these *Guidelines*, these are 40 µg/ft² on floors and 250 µg/ft² on interior windowsills. (As of the publication of this edition of these *Guidelines*, in response to a petition received by the EPA on August 10, 2009, HUD and EPA are collaboratively considering whether to lower the dust-lead hazard thresholds.) Also called **Lead-contaminated dust**.

Notes:

- ◆ These *Guidelines*' related recommended standards for lead hazard screens, for which fewer samples are taken than in a risk assessment, are 25 µg/ft² for floors, and 125 µg/ft² for interior windowsills; if the results equal or exceed these levels, these *Guidelines* recommend that a full risk assessment be performed to determine if and where lead-based paint hazards truly exist). (See Chapter 5, especially Section II.I and V.D.)
- ◆ The EPA's related standards for clearance are 40 µg/ft² on floors, 250 µg/ft² on interior windowsills and 400 µg/ft² on window troughs. (40 CFR 745.227(e)(8) (viii))

Dust removal: A form of interim control that involves initial cleaning followed by periodic monitoring and recleaning, as needed. Depending on the severity of lead-based paint hazards, dust removal may be the primary activity or just one element of a broader control effort.

Dust trap: A surface, component, or furnishing that serves as a reservoir where dust can accumulate.

EBL: Elevated blood lead level as defined by the Centers for Disease Control and Prevention. Local standards may differ. In 2012, the CDC revised its definition to use a "reference value" of the blood lead level at the 97.5th percentile of children aged 1 to 5 years old based on its National Health and Nutrition Examination Survey (NHANES). As of the publication of this edition of these *Guidelines*, the reference level was 5 µg/dL.

EIBLL child: see **Environmental Intervention Blood-Lead Level (EIBLL) child**.

Efflorescence: The salt rising to the surface of a material, such as masonry, plaster, or cement, caused by the movement of water through the material. Paint or encapsulants may not adhere to a surface contaminated with efflorescence.

Elastomeric: A group of pliable, elastic liquid encapsulant coatings. An elastomer is a macromolecular material that, at room temperature, is capable of substantially recovering its size and shape after the force causing its deformation is removed (see ASTM D907, D14).

Environmental Intervention Blood-Lead Level (EIBLL): As defined by HUD in the Lead Safe Housing Rule (24 CFR 35.110) as of the publication of this edition of these *Guidelines*, a blood lead level of a child under age 6 years at or above 20 µg/dL in a single test or at 15-19 µg/dL in two tests taken at least three months apart (). While the term and its definition were based on guidance from the Centers for Disease Control and Prevention, in 2012 CDC revised its guidance, and it is anticipated that those laws and regulations will be reconsidered at some point. See Chapter 16.

Encapsulation: Any covering or coating that acts as a barrier between lead-based paint and the environment, the durability of which relies on adhesion and the integrity of the existing bonds between multiple layers of paint and between the paint and the substrate. See, also, **Enclosure**.

Enclosure: The use of rigid, durable construction materials that are mechanically fastened to the substrate to act as a barrier between the lead-based paint and the environment.

Engineering controls: Measures other than respiratory and other personal protection or administrative controls that are implemented at the worksite to contain, control, and/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. The term may be used in the occupational health setting in regard to preventing workers' exposures to lead; it can also be used in other lead hazard control settings, such as in regard to preventing residents' exposure.

Evaluation: Risk assessment, paint inspection, reevaluation, paint testing, environmental investigation, clearance examination, or risk assessment screen.

Examination: see **Clearance examination**.

Exposure assessment: The employer's sampling and analysis of the air workers breathe to determine the degree of worker exposure to lead by workers in each job classification in each work area. This involves air sampling inside the monitored workers' breathing zones, and comparison of the results to the OSHA Action Level and Permissible Exposure Limit for lead.

Exterior work area: For lead hazard control work, the exterior work area includes any exterior building components, such as roofs, exterior walls, the exterior portions of windows and doors, exterior stairways, fences, and unenclosed porches and patios; the safety perimeter; and access barriers, where work is being done, and the pathways and storage areas used to access those components.

Facility (pertaining to hazardous waste): All buildings, contiguous land, structures, and other appurtenances, as well as any improvements, where lead-based paint or hazardous waste is treated, stored, or disposed. A facility may consist of several different treatment, storage, or disposal units, such as landfills and surface impoundments.

Federal Register (FR): A daily Federal publication that contains proposed and final regulations, rules, and notices.

Field blank: A clean sample of the matrix (e.g., filter, or wipe) that has been exposed to the sampling conditions; returned to the laboratory; and analyzed as an environmental sample. Clean quartz sand, air sampling filters and cassettes, and clean wipes can be used as field blanks. The field blank, which should be treated just like the sample, indicates possible sources of contamination.

FR: see (FR).

Friction surface: Any interior or exterior surface, such as a window or stair tread, subject to abrasion or friction.

Garden area: An area where plants are cultivated for human consumption or for decorative purposes.

Geometric mean: A type of mean or average, which indicates the central tendency or typical value of a set of numbers. It is similar to the arithmetic mean, for which the numbers are added and then one n^{th} (where n is the count of numbers in the set) is found by division, except that, for the geometric mean, the numbers are multiplied and then the n^{th} root (where n is the count of numbers in the set) of the product is taken. For example, for the values 2, 2 and 16, the arithmetic mean is $(2 + 2 + 16) / 3 = 20/3 = 6.6666+$, and the geometric mean is $(2 * 2 * 16)^{1/3} = 64^{1/3} = 4$.

Heat gun: A device capable of heating lead-based paint causing it to separate from the substrate. For lead hazard control work, the heat stream leaving the gun should not exceed 1100°F (some authorities may use a different temperature).

HEPA filter: see **High Efficiency Particulate Air (HEPA) filter**.

High Efficiency Particulate Air (HEPA) filter: A filter capable of removing particles of 0.3 microns or larger from air at 99.97 percent or greater efficiency.

HEPA vacuum: A vacuum cleaner which has been designed with a HEPA filter as the last filtration stage. The vacuum cleaner must be designed so that all the air drawn into the machine is expelled through the HEPA filter with none of the air leaking past it. (Note that HUD's definition in its Lead Safe Housing Rule, with its slightly different wording, is substantively identical.)

Household hazardous waste: Household waste is regular garbage or trash that is disposed of as municipal waste, and managed according to state and local requirements. Waste generated in residential setting. EPA has determined that residents and contractors working in residences are entitled to manage their own LBP waste in this manner.

Impact surface: An interior or exterior surface (such as surfaces on doors) subject to damage by repeated impact or contact.

Incinerator: An enclosed device using controlled flame combustion that neither meets the criteria for classification as a boiler nor is listed as an industrial furnace.

Indian Housing Agency: An agency within an Indian tribal government that receives grants and provides assistance (under the United States Housing Act of 1937) for affordable housing activities for Indians.

Industrial hygienist: A person having a college or university degree in engineering, chemistry, physics, medicine, or a related physical or biological science who, by virtue of special training, is qualified to anticipate, recognize, evaluate, and control environmental and occupational health hazards and the impact of those hazards on the community and workers.

In-place management: see **Interim controls**.

Inspection (of paint): A surface-by-surface investigation to determine the presence of lead-based paint (in some cases including dust and soil sampling) and a report of the results.

Inspector (more formally, Lead-Based Paint Inspector): An individual who has successfully completed training from an accredited program and been licensed or certified by the appropriate State or local agency to:

- (1) perform inspections to determine and report the presence of lead-based paint on a surface-by-surface basis through on-site testing;
- (2) report the findings of such an inspection;
- (3) collect environmental samples for laboratory analysis;
- (4) perform clearance testing; and optionally
- (5) document successful compliance with lead-based paint hazard control requirements or standards.

Interim controls: A set of measures designed to temporarily reduce human exposure or possible exposure to lead-based paint hazards. Such measures include, but are not limited to, specialized cleaning, repairs, maintenance, painting, temporary containment, and the establishment and operation of management and resident education programs. Monitoring, conducted by owners, and reevaluations, conducted by professionals, are integral elements of interim control. Interim controls include dust removal; paint film stabilization; treatment of friction and impact surfaces; installation of soil coverings, such as grass or sod; and land use controls. Interim controls that disturb painted surfaces are renovation activities under EPA's Renovation, Repair and Painting Rule. See, also, **Monitoring, Reevaluation, and Abatement.**

Interior windowsill: The portion of the horizontal window ledge that protrudes into the interior of the room, adjacent to the window sash when the window is closed; often called the window stool.

Investigation (pertaining to EIBLL cases only): The process of determining the source of lead exposure for a child or other resident with an elevated blood lead level. Investigation consists of administration of a questionnaire, comprehensive environmental sampling, case management, and other measures.

Investigator: A person who conducts an investigation of a dwelling where a resident has an environmental intervention blood lead level. The investigator must be proficient in interviewing techniques, environmental sampling, and the interpretation of risk assessment and environmental sampling data.

Laboratory analysis: A determination of a sample by a qualified laboratory using a defined method meeting specified performance and quality criteria. In the case of analysis of samples of lead in paint, dust or soil in target housing or pre-1978 child-occupied facilities, the laboratory must be recognized by NLLAP. Among the methods used by these laboratories for determining lead content are atomic absorption spectroscopy (AAS), inductively coupled plasma emission spectroscopy (ICP), or laboratory-based K or L X-ray fluorescence, or an equivalent method.

Landfill: A State licensed or State permitted disposal facility that meets municipal solid waste standards.

Latex: A waterborne emulsion paint made with synthetic binders, such as 100 percent acrylic, vinyl acrylic, terpolymer, or styrene acrylic; a stable emulsion of polymers and pigment in water.

LBP: Lead-based paint.

Lead: Lead includes metallic lead and inorganic and organic compounds of lead.

Lead-based paint: Any paint, varnish, shellac, or other coating that contains lead equal to or greater than 1.0 mg/cm² as measured by XRF or laboratory analysis, or 0.5 percent by weight (5000 mg/g, 5000 ppm, or 5000 mg/kg) as measured by laboratory analysis. (Local definitions may vary.) (As of the publication of this edition

of these *Guidelines*, in response to a petition received by the EPA on August 10, 2009, HUD and EPA are collaboratively considering whether to lower the threshold levels of lead-based paint.)

Lead-based paint abatement planner/designer: An individual who has completed an accredited training program on planning and designing lead-based paint hazard control projects.

Lead-based paint abatement worker: see **Worker**.

Lead-based paint free: A property where no lead in amounts greater than or equal to 1.0 mg/cm² in paint (or surface coatings) was found on any building components, using the inspection protocol in Chapter 7 of the HUD *Guidelines* for the Evaluation and Control of Lead-Based Paint Hazards in Housing (2012 Revision).

Notes:

- ◆ A lead-based paint-free property may contain lead incorporated into components that are not lead-based painted, such as ceramic tile, or painted components below the standard stated in this definition.
- ◆ Some states and localities have a lower threshold for the definition of lead-based paint.
- ◆ OSHA does not consider whether paint is lead-based paint in its regulations; its regulations focus on whether workers may be exposed to lead whatever the source.

Lead-based paint hazard: A condition in which exposure to lead from lead-contaminated dust, lead-contaminated soil, or deteriorated lead-based paint would have an adverse effect on human health (as established by the EPA at 40 CFR 745.65, under Title IV of the Toxic Substances Control Act). Lead-based paint hazards include, for example, **paint-lead hazards**, **dust-lead hazards**, and **soil-lead hazards**.

Lead-based paint hazard control: Activities intended to control and eliminate lead-based paint hazards, including but not limited to interim controls and abatement.

Lead-based paint inspector or **Lead paint inspector:** see **Inspector**.

Lead-based paint risk assessor: see **Risk Assessor**.

Lead carbonate: A pigment used in some lead-based paints as a hiding agent; also known as white lead.

Lead-contaminated dust: See **Dust-lead hazard**.

Lead-contaminated soil: See **Soil-lead hazard**.

Lead-containing paint: As defined by the Consumer Product Safety Commission, paint or other similar surface coating materials for consumer use that contain lead or lead compounds and in which the lead content (calculated as lead metal) is in excess of 0.009 percent by weight of the total nonvolatile content of the paint or the weight of the dried paint film (see 16 CFR 1303.1(c)).

Lead hazard screen: A method of determining, in buildings in good condition, whether they should have a full risk assessment. The screen uses fewer samples but more stringent evaluation criteria (standards) than regular risk assessments. Also called a **risk assessment screen**.

Lead-poisoned child: A child with an elevated blood level (see **EBL**).

Lead-specific detergent: A cleaning agent manufactured specifically for cleaning and removing leaded dust or other lead contamination.

Leaded dust: see **Lead-contaminated dust**.

Licensed: Holding a valid license or certification issued by EPA or by an EPA-authorized State or Tribal program pursuant to Title IV of the Toxic Substances Control Act. The license is based on certification for lead-based paint hazard evaluation or control work. See, also, **Certified**.

Maintenance: In the context of lead hazard control, work intended to maintain adequate living or occupancy conditions in target housing or a pre-1978 child-occupied facility; it may have the potential to disturb known or presumed lead-based paint.

Mat: See **Walkoff mat**.

Matrix blank: A sample of the matrix (paint chips, soil, or dust) that does not contain the analyte lead. This sample goes through the complete analysis, including digestion.

MDL: see **Method detection limit**.

Mean: The arithmetic average of a series of numerical data values; for example, the algebraic sum of the data values divided by the number of data values. Synonymous with **Arithmetic mean** and **Average**. See, also, the related term **Standard Deviation**.

Medical removal: The temporary removal of an employee from the job because the employee's blood lead level is at or above 50 µg/dL of the occurrence of an adult "elevated blood lead level" as defined in the OSHA Lead Exposure in Construction standard (29 CFR 1926.62(k)(1)(i)).

Method blank: see **Digestion blank**.

Method detection limit (MDL): The minimum concentration of an analyte that, for a given matrix and method, has a 99 percent probability of being identified, qualitatively or quantitatively measured, and reported to be greater than zero.

mg: Milligram; 1/1000 of a gram.

µg (or mcg): Microgram. The prefix micro means 1/1,000,000 (or one-millionth); a microgram is 1/1,000,000 of a gram and 1/1000 of a milligram; equal to about 35/1,000,000,000 (35 billionths) of an ounce (an ounce is equal to 28,400,000 mg).

Microgram: see **µg**.

Mil: 1/1000 of an inch; used to measure thickness.

Milligram: see **mg**.

Monitoring: An organized program of regular surveillance to determine that:

- (1) known or presumed lead-based paint is not deteriorating;
- (2) lead-based paint hazard controls, such as paint stabilization, interim control measures for soil, enclosure, or encapsulation have not failed;
- (3) structural problems do not threaten the integrity of hazard controls or of known or presumed lead-based paint, and
- (4) dust lead levels have not risen above applicable standards.

There are two types of monitoring activities: visual surveys by property owners and reevaluations by certified risk assessors. Visual surveys are generally conducted annually and at rental housing unit turn-over for the purpose of making the first three determinations listed above. Monitoring is not required in properties known to be free of lead-based paint. See also **Reevaluation**.

Note: Worker exposures must be monitored for lead; this is a different sense of “monitoring” than the facility and operational monitoring discussed above. See **Exposure Assessment**, Chapter 9 and Appendix 6.

Mouthable surface: see **Chewable surface**.

Multifamily housing: Housing that contains more than one dwelling unit per location. HUD, the U.S. Department of Agriculture, and other agencies’ programs may use a larger number of units, such as five or ten, to differentiate single family housing from multifamily housing in their regulations.

NLLAP requirements: Requirements specified by the EPA National Lead Laboratory Accreditation Program (NLLAP), for accreditation for the lead analysis of paint, soil, and dust matrixes by an EPA-recognized laboratory accreditation organization.

Offsite paint removal: The process of removing a component from a building and stripping the paint from the component at a paint stripping facility away from the building’s property.

Ongoing monitoring: see **Monitoring**.

Owner: A person, firm, corporation, guardian, conservator, receiver, trustee, executor, government agency or entity, or other judicial officer who, alone or with others, owns, holds, or controls the freehold or leasehold title or part of the title to property, with or without actually possessing it. This definition includes a vendee who possesses the title, but does not include a mortgagee or an owner of a reversionary interest under a ground rent lease.

Oxidation: An example of a chemical reaction that occurs upon exposure to oxygen and other oxidizing substances. Some coatings cure by oxidation; oxygen enters the liquid coating and cross links (attaches) the resin molecules. This film-forming method is also called “air cure” or “air dry.” Oxidation also causes rust to form on metals and paint to chalk.

Paint-lead hazard:

Lead-based paint on a friction surface that is subject to abrasion and where a dust-lead hazard is present on the nearest horizontal surface underneath the friction surface (e.g., the window sill, or floor);

Damaged or otherwise deteriorated lead-based paint on an impact surface that is caused by impact from a related building component;

A chewable lead-based painted surface on which there is evidence of teeth marks; or

Any other deteriorated lead-based paint in any residential building or child-occupied facility or on the exterior of any residential building or child-occupied facility.

Paint stabilization: The process of wet scraping, priming, and repainting surfaces coated with deteriorated lead-based paint. Paint stabilization also includes eliminating the cause(s) of paint deterioration, cleanup and clearance.

Paint removal: The removal of lead-based paint from surfaces; this may be an abatement strategy, or it may occur as a part of a renovation project.

Patch test: A test method or procedure to assess the adhesion of an encapsulant coating to a substrate covered with a layer or layers of lead-based paint.

Personal breathing zone samples: Air samples collected from the breathing zone of a worker (within a 1 foot radius of the worker's mouth) but outside the respirator. With respect to assessing lead exposures, the samples are collected with a personal sampling pump operating at 2 liters per minute, drawing air through a 37 mm mixed cellulose ester filter housed in a closed-face cassette with a pore size of 0.8 micrometers. See **Exposure assessment**.

Personal Protective Equipment (PPE): Equipment for protecting the eyes, face, head, and/or extremities; includes protective clothing, respiratory devices, and protective shields; used when hazards capable of causing bodily injury or impairment are encountered.

PHA: see **Public Housing Agency (PHA)**.

Pigment: Insoluble, finely ground materials that give paint its properties of color and hide.

Plastic: see **Polyethylene plastic**.

Play area: An area of frequent soil contact by children of under age 6 as indicated by, but not limited to, such factors including the following: the presence of outdoor play equipment (e.g., sandboxes, swing sets, and sliding boards), toys, or other children's possessions, observations of play patterns, or information provided by parents, residents, care givers, or property owners.

Polyethylene plastic: Polyethylene plastic or any other thick plastic material shown to demonstrate at least equivalent performance in containing dust and waste, resist tearing, and, after being properly sealed, remain leak tight with no visible signs of discharge during movement or relocation.

Polyurethane: An exceptionally hard and wear-resistant coating created by the reaction of polyols with a multifunctional isocyanate; often used to seal wood floors following lead-based paint hazard control work and cleaning.

Precision: The degree to which a set of observations or measurements of the same property, usually obtained under similar conditions, conform to themselves; a data quality indicator. Precision is usually expressed in either absolute or relative terms as standard deviation, variance, or range. Often known as "reproducibility." See also the related, but different, term **Accuracy**.

Primary prevention: The process of preventing lead hazards from occurring and, when they do occur, controlling lead hazards to prevent exposure *before* a child is poisoned. See, also, **Secondary prevention** and **Tertiary prevention**.

Primary standard: A substance or device with a property or value that is unquestionably accepted, within specified limits, in establishing the value of the same or related property of another substance or device.

Public Housing Agency (PHA): Any State, county, municipality, or other government entity or public body, or agency or instrumentality thereof, authorized to engage or assist in the development or operation of housing for low-income families.

Quality Assurance (QA): An integrated system of activities involving planning, quality control, quality assessment, reporting, and quality improvement to ensure that a product or service meets defined standards of quality within a stated level of confidence.

Quality Control (QC): The overall system of technical activities whose purpose is to measure and control the quality of a product or service so that it meets the needs of users. The aim is to provide a level of quality that is satisfactory, adequate, dependable, and economical.

Random sample: A sample drawn from a population in a way that allows each member of the population to have an equal chance of being selected. Random sampling is a process used to identify locations for the lead-based paint inspections in multifamily dwellings. See, also, **Targeted sample** and **Worst-case sample**.

RCRA: see **Resource Conservation and Recovery Act (RCRA)**.

Recognized laboratory: A laboratory that has been evaluated by the EPA's National Lead Laboratory Accreditation Program (NLLAP), and has demonstrated the capability to accurately analyze paint chip, dust, or soil samples for lead; the recognition for analysis of lead in a particular medium is held for a specified period of time, subject to continued quality control testing under the NLLAP.

Reevaluation: The combination of a visual assessment and collection of dust and, as appropriate, soil samples performed by a certified risk assessor to determine if the housing is free of lead-based paint hazards, and determine whether previously implemented lead-based paint hazard control measures are still effective.

Reference material: A material or substance that has at least one sufficiently well established property that can be used to calibrate an apparatus, assess a measurement method, or assign values to materials.

Removal: see **Paint removal**.

Renovation: According to EPA, the modification of any existing structure, or a portion of it, that results in the disturbance of painted surfaces, unless it is performed as part of an abatement or is a minor repair and maintenance activity, as these terms are defined by 40 CFR 745.223 and 745.83, respectively; see Appendix 6. The term renovation includes (but is not limited to): The removal, modification or repair of painted surfaces or painted components (e.g., modification of painted doors, surface restoration, window repair, surface preparation activity (such as sanding, scraping, or other such activities that may generate paint dust)); the removal of building components (e.g., walls, ceilings, plumbing, windows); weatherization projects (e.g., cutting holes in painted surfaces to install blown-in insulation or to gain access to attics, planing thresholds to install weather-stripping), and interim controls that disturb painted surfaces. A renovation performed for the purpose of converting a building, or part of a building, into target housing or a child-occupied facility is a renovation under this subpart.

Renovator: An individual who either performs or directs workers who perform renovations. Under EPA's Renovation, Repair, and Painting (RRP) Rule, a **Certified Renovator**.

Replacement: A strategy of abatement that involves the removal of building components coated with lead-based paint (such as windows, doors, and trim) and the installation of new components free of lead-based paint.

Reporting Limit: This value describes what a laboratory has determined as the lowest lead value it can report with sufficient confidence (such as 95% confidence) for the amount of the analyte (e.g., lead) in the matrix of interest (e.g., paint, dust, or soil).

Representative sample: A sample of a universe or whole (e.g., bare soil sample, waste sample pile, groundwater, or waste stream) that can be expected to exhibit the average properties of the entire universe or whole.

Resident: A person who regularly lives in a dwelling. A person who is not regularly living in the dwelling unit but is present when lead hazard control work is being done is an occupant of the dwelling who deserves the same level of protection as the residents of the dwelling.

Resource Conservation and Recovery Act (RCRA): The primary Federal statute governing waste management from generation to disposal. RCRA defines the criteria for hazardous and nonhazardous waste.

Risk assessment: An on-site investigation of a residential dwelling to determine the existence, nature, severity, and location of lead-based paint hazards. Risk assessments, which must be conducted by a certified risk assessor, include an investigation of the age, history, management, and maintenance of the dwelling, and the number of children under age 6 and women of childbearing age who are residents; a visual assessment; limited randomized environmental sampling (i.e., collection of dust wipe samples, soil samples, and deteriorated paint samples); and preparation of a report identifying abatement and interim control options based on specific conditions. HUD's Lead Safe Housing Rule requires risk assessments for certain types and amounts of HUD assistance; in these cases, a risk assessment must be no more than 12 months old to be considered current.

Risk assessment screen: See **Lead hazard screen**.

Risk assessor: A certified individual who has successfully completed lead-based paint hazard risk assessment training with an accredited training program and who has been certified to:

- (1) perform risk assessments;
- (2) identify acceptable abatement and interim control strategies for reducing identified lead-based paint hazards;
- (3) perform clearance testing and reevaluations; and
- (4) document the successful completion of lead-based paint hazard control activities.

RL: see **Reporting Limit (RL)**

Room Equivalent: A room equivalent is an identifiable part of a residence (e.g., room, house exterior, foyer, etc.).

Sample site: A specific spot on a surface being tested for lead loading or concentration.

Sampling Technician: A person who has completed a EPA-accredited or EPA-authorized State-accredited training course for sampling technicians and is qualified to perform clearance examinations after certain interim control activities. (Previously known as a clearance technician.)

Saponification: The chemical reaction between alkalis and oil that produces a type of soap. Because of saponification, oil and alkyd coatings will not adhere to masonry substrates, galvanized metals, or zinc-rich primers.

Screen: See **Lead hazard screen**.

Screening: The process of testing children to determine if they have elevated blood lead levels.

Secondary prevention: The process of identifying children who have elevated blood lead levels, and controlling or eliminating the sources of further exposure. See, also, **Primary prevention** and **Tertiary prevention**.

Secondary standard: A reference material with a well-defined, high quality, traceability linkage to existing **primary standards** for the same measurements. **SEL:** see **Substrate Equivalent Lead (SEL)**.

Site: Regarding hazardous waste, the land or body of water where a facility is located or an activity is conducted. The site includes adjacent land used in connection with the facility or activity. (See Chapter 10.)

Small quantity generator: Owners, contractors (generators), or both who produce less than 100 kg of hazardous waste per month and accumulate less than 100 kg of hazardous waste at any one time, or who produce less than 1 kg of *acutely* hazardous waste per month and accumulate less than 1 kg of *acutely* hazardous waste at any one time. (See Chapter 10.)

Soil-lead hazard: Bare soil on residential property that contains lead in excess of the standard established by the EPA under Title IV of the Toxic Substances Control Act. EPA standards for soil-lead hazards, published at 40 CFR 745.65(c), as of the publication of this edition of these *Guidelines*, is 400 µg/g in play areas and 1,200 µg/g in the rest of the yard. Also called **Lead-contaminated soil**.

Spectrum analyzer: A type of XRF analyzer that provides the operator with a plot of the energy and intensity, or counts, of K shell and/or L shell X-ray spectra, as well as a calculated lead concentration. See, also, **XRF analyzer**.

Spiked matrix: See **Spiked sample**.

Spiked sample: A sample prepared by adding a known mass of the target analyte (e.g., lead, as in leaded dust) to a specific amount of matrix sample (e.g., a dust wipe) for which an independent estimate of the target analyte mass is available. Spiked samples are used to determine, for example, the effect of the matrix on a method's recovery efficiency. See, also, the related term **Blind sample**.

Spot prime: To apply a paint primer to localized areas of exposed substrate.

Standard deviation: A measure of the precision of a reading; the spread of the deviation from the mean. The smaller the standard deviation, the more precise the analysis. The standard deviation is calculated by first obtaining the mean, or the arithmetic average, of all of the readings. A formula is then used to calculate how much the individual values vary from the mean – the standard deviation is the square root of the arithmetic average of the squares of the deviation from the mean. Many hand calculators and computer spreadsheets have an automatic standard deviation function. See, also, **Mean**.

Standard reference material (SRM): A certified reference material produced by the National Institute of Standards and Technology (NIST at the U.S. Department of Commerce) and characterized for absolute content independent of analytical method. See, also, **Certified reference material**.

Subsample: A constituent portion of a sample. A subsample may be either a field subsample or a laboratory subsample, depending on where the subsample is created. A subsample may be combined with other subsamples to produce a composite sample. See, also, **Composite sample**.

Substrate: A surface on which paint, varnish, or other coating has been applied or may be applied. Examples of substrates include wood, plaster, metal, and drywall.

Substrate effect: The radiation returned to an XRF analyzer by the paint, substrate, or underlying material, in addition to the radiation returned by any lead present. This radiation, when counted as lead X-rays by an XRF analyzer contributes to substrate equivalent lead (bias). The inspector may have to compensate for this effect when using XRF analyzers. See, also, **XRF analyzer**.

Substrate Equivalent Lead (SEL): The XRF measurement taken on an unpainted surface; used to calculate the corrected lead concentration on a surface by using the following formula: Apparent Lead Concentration - Substrate Equivalent Lead = Corrected Lead Concentration. See, also, **Apparent Lead Concentration (ALC)**, **Corrected Lead Concentration (CLC)**, and **XRF analyzer**.

Target housing: Any housing constructed before 1978 – except dwellings that do not contain bedrooms, or dwellings that are designated specifically for the elderly or persons with disabilities, unless a child younger than 6 resides or is expected to reside in the dwelling. In the case of jurisdictions that banned the sale or use of lead-based paint before 1978, the Secretary of HUD may designate an earlier date for defining target housing.

Targeted sample: A sample of dwelling units selected from an apartment building or housing development using information supplied by the owner, and not by random selection or on the basis of visual evidence obtained by the risk assessor. Based on the owner's information, the units are selected to have the greatest probability of containing lead-based paint hazards. See, also, **Worst-case sample** and **Random sample**.

TCLP: see **Toxicity Characteristic Leaching Procedure (TCLP)**.

Tribally-Designated Housing Entity: A designation by an Indian tribe's authority (i.e., tribal council or like body) of an entity other than the tribal government to receive grants and provide assistance under the Native American Housing Assistance and Self-Determination Act (P.L. 104-330 as amended) for affordable housing activities for Indians.

Tertiary prevention: Providing medical treatment to children with elevated blood lead levels to prevent more serious injury or death.

Testing combination: A unique surface to be tested that is characterized by the room equivalent, component, and substrate.

Test location: A specific area on a testing combination where XRF instruments will test for lead-based paint.

Toxicity Characteristic Leaching Procedure (TCLP): A laboratory test to determine if excessive levels of lead or other hazardous materials could leach from a sample into groundwater; usually used to determine if waste is hazardous based on its toxicity characteristics. (See Chapter 10.)

Trained: Successful completion of a training course in a particular discipline. For lead hazard evaluation or control work, the training course must be accredited by EPA or by an EPA-authorized State or tribal program, pursuant to Title IV of the Toxic Substances Control Act.

Treatment: A method designed to control lead-based paint hazards. Treatment includes interim controls, abatement, and removal.

Trisodium phosphate (TSP) detergent: A detergent that contains trisodium phosphate. These guidelines do not recommend using TSP.

Trough: see **Window trough**.

Truck-mounted vacuum unit: A vacuum system whose components, except for hoses and attachments, are located outside the building undergoing dust removal. The exhaust is vented outside so that the interior dust is not disturbed.

TSD: see **Treatment, Storage, and Disposal (TSD) facility**.

TSP: see **Trisodium phosphate (TSP) detergent**.

Useful life: The life expectancy of a coating before it requires refinishing or some other form of maintenance.

Vacuum/wet cleaning/vacuum cycle: The cleaning cycle that begins with HEPA vacuuming, followed by a wet cleaning with a detergent, followed by a final pass with a HEPA vacuum over the surface.

VOC: see **Volatile Organic Compound (VOC)**.

Volatile Organic Compound (VOC): Organic (carbon-based) substances that evaporate from a coating, such as during the coating or curing process.

Walkoff mat: A washable, fibrous material (preferably with a rubber or vinyl backing) positioned at an entryway to reduce transport of lead dust and/or lead soil into a building, or out of a work area.

White lead: A white pigment, usually lead carbonate. See, also, **Lead carbonate**.

Windowsill: see **Interior windowsill**.

Window stool: see **Interior windowsill**.

Window trough: For a typical double hung window, the portion of the exterior windowsill between the interior windowsill (or stool) and the frame of the storm window. If there is no storm window, the window trough is the area that receives both the upper and lower window sashes when they are both lowered. (Sometimes inaccurately called a window “well.”) See, also, **Window well**.

Window well: The space that provides exterior access and/or light to a window that is below grade, i.e., below the level of the surrounding earth or pavement. See, also, **Window trough**.

Worksite: Any interior or exterior area where lead-based paint hazard control work takes place. There may be more than one worksite in a dwelling unit or at a residential property.

Worksite preparation activities: A set of measures designed to protect residents and the environment from leaded dust, paint chips, or other forms of lead contamination through the erection of barriers and the establishment of access control, resident relocation or movement restrictions, warning signs, ventilation, engineering controls, and other measures.

Worst case sample: A sample of dwelling units having the greatest probability of containing lead-based paint hazards selected by a risk assessor on the basis of the risk assessor’s visual examination of all dwelling units in a housing development or apartment building. See, also, **Targeted sample** and **Random sample**.

XRF analyzer: An instrument that determines lead concentration in milligrams per square centimeter (mg/cm²) using the principle of X-ray fluorescence (XRF). Two types of XRF analyzers are used – direct readers and spectrum analyzers. In these *Guidelines*, the term XRF analyzer generally refers to portable instruments manufactured to analyze paint, and does not refer to laboratory grade units. Some portable instruments can be used to analyze lead in dust or soil.