



Asbestos and Lead Based Paint Inspection

Palomar Community College
Student Health Services Building A
1140 W. Mission Road
San Marcos, CA 92069

Prepared For:
Mr. Don Thompson
Palomar Community College District
1140 W. Mission Road
San Marcos, CA 92069

MTGL, Inc. Project Number:
SDPE-14-163

Firm Information:
MTGL, Inc.
6295 Ferris Square, Ste. C
San Diego, CA 92121
714-632-2999 phone
714-632-2974 fax

CDPH Lead Inspector/AHERA Building Inspector: Michelle Therman
CDPH Lead Inspector/Assessor Certification Number: 19669

Certified Asbestos Consultant: Carl Tucker
Certified Asbestos Consultant Certification Number- 92-0412

Report Issuance Date: October 10, 2014

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SECTION 1

Introduction

GENERAL INFORMATION

MTGL was retained by the Palomar Community College District to conduct a bulk material inspection of suspect asbestos containing materials of client specified areas, located at 1140 W. Mission Road, in San Marcos, California. The client specified locations included Building A. This document is prepared for the sole use of the Palomar Community College District and/or any regulatory or governmental agencies that may directly become involved with this report.

AUTHORIZATION

Authorization to perform this survey was given by Mr. Don Thompson of the Palomar Community College District with a notice to proceed via sinned proposal SDPE-14163.

PERFORMANCE

All visual inspections and sample collection was conducted on September 23, 2014 and performed in accordance with the client's direction, Federal, State and local requirements. The inspection was performed by Mr. Henry Lee, a Certified Asbestos Consultant and Ms. Michelle Ehresman, a CDPH Certified Lead Inspector/Assessor. Project Management was conducted by Mr. Carl Tucker, MTGL, Inc.'s Senior IH.

SECTION 2 Warranty

ASBESTOS SURVEY

MTGL warrants that the findings contained herein have been prepared in general accordance with accepted professional practices as applied by similar professionals in the community at the time of its preparation. Changes in the state of the art or in applicable regulations cannot be anticipated and have not been addressed in this report.

The field and laboratory results reported herein are considered sufficient in detail and scope to determine the presence, condition and hazard potential of accessible and/or exposed suspect Asbestos in the facility at the time of inspection. Test results are valid only for the materials tested.

There is a distinct possibility that conditions may exist which could not be identified within the scope of study or which were not apparent during the site visit. This inspection covered only those areas which were exposed and/or physically accessible to the inspector. The study is also limited to the information available from the client at the time it was conducted.

LEAD-BASED PAINT SURVEY

MTGL, Inc. warrants that the findings contained herein have been prepared with the level of care and skill exercised by experienced and knowledgeable environmental consultants who are appropriately licensed or otherwise trained to perform lead-based paint assessments pursuant to the scope of work required on this project.

MTGL, Inc. warrants that the findings contained herein have been prepared in general accordance with accepted professional practices as applied by similar professionals in the community at the time of its preparation. Changes in the state of the art or in applicable regulations cannot be anticipated and have not been addressed in this report.

The survey included the inspection of accessible materials only. MTGL did not inspect or sample inaccessible areas such as behind walls or within ductwork, and did not dismantle any part of the structure to survey inaccessible areas. For the purpose of this warranty, inaccessible is defined as areas of the building that could not be tested (sampled) without destruction of the structure or a portion of the structure. Inaccessible materials that are visible to MTGL inspectors shall be assumed to be lead-based paint coated.

It is the owner's legal obligation to disclose the inspection results to tenants and/or purchasers before obligation under 24 CFR part 35 and 40 CFR part 745 (published in the Federal Register, Volume 61, Number 45, March 6, 1996, starting on P. 9064; copies of the regulations and related materials can be obtained from the National Lead Information Center Clearinghouse, (1-800-424-LEAD))

SECTION 3 Methodology

GENERAL REFERENCES

ASBESTOS

The limited asbestos inspection and sampling procedures were performed in general accordance with the guidelines published by the EPA in 40 CFR Part 763 Subpart E, October 30, 1987. Sampling of all accessible and/or exposed suspect asbestos containing materials was performed as recommended by U.S. EPA Guidance document 700/B-92/001, February 1992.

HOMOGENEOUS MATERIAL CLASSIFICATIONS

A preliminary walkthrough of the building was conducted to determine areas of materials which were visually similar in color, texture, general appearance and which appeared to have been installed at the same time. Such materials are termed "homogeneous materials" by the EPA. During this walkthrough the approximate locations of these homogeneous materials were noted. Only materials which were accessible and/or exposed and suspected to contain asbestos were identified.

Following the EPA inspection protocol, each identified suspect homogeneous material was placed in one of the following EPA classifications:

- ◆ **Surfacing Materials** (spray-on or trowel applied to building members)
- ◆ **Thermal System Insulation** (materials generally applied to various mechanical systems)
- ◆ **Miscellaneous Materials** (any materials which do not fit either of the above categories)

SAMPLING PROCEDURES

Following the walkthrough, the inspector collected selected samples of exposed and/or accessible suspect asbestos containing materials (ACM) throughout the interior of the building. Sample collections of the roof have not been requested by the client at the time of the report.

EPA guidelines were used to determine the sampling protocol. Sampling locations were chosen to be representative of the homogeneous material.

Samples of friable material were collected in general accordance with the EPA random sampling protocol outlined in the EPA publication, "Asbestos in Buildings: Simplified Sampling Scheme for Friable Surfacing Materials" (EPA 560/5-85-030a, October 1985). The homogeneous sampling area was divided into a grid of nine (9) sub-areas. If nine samples were taken, one sample was taken from each sub-area. If less than nine samples were taken, the EPA random numbering diagram was used to determine which sub-areas would be sampled. While an effort was made to extract the samples from approximately the middle of each sub-area, samples were taken preferentially from already damaged areas, or areas which were the least visible.

Samples of surfacing and miscellaneous materials were taken as randomly as possible while again attempting to sample already damaged areas so as to minimize disturbance of the material.

Homogeneous materials were analyzed for asbestos content. Subsequent analysis of any additional samples within a given homogenous group was not performed once a material was found to contain asbestos.

LABORATORY PROCEDURES

Method of Analysis

Analysis was performed by using the bulk sample for visual observation and slide preparation(s) for microscopic examination and identification. The samples were mounted on slides and then analyzed for asbestos (chrysotile, amosite, crocidolite, anthophyllite, and actinolite/tremolite), fibrous nonasbestos constituents (mineral wool, paper, etc.) and nonfibrous constituents. Asbestos was identified by refractive indices, morphology, color, pleochroism, birefringence, extinction characteristics, and signs of elongation. The same characteristics were used to identify the nonasbestos constituents.

The microscopist visually estimated relative amounts of each constituent by determining the volume of each constituent in proportion to the total volume of the sample, using a stereoscope.

All bulk samples were analyzed by Polarized Light Microscopy (PLM) with dispersion staining as described by the method of the determination of asbestos in bulk insulation, EPA/600/R-93/116, July 1993. This is a standard method of analysis in optical mineralogy and the currently accepted method for the determination of asbestos in bulk samples. A suspect material is immersed in a solution of known refractive index and subjected to illumination by polarized light. The characteristic color displays which result enable mineral identification. It should be noted that some ACBM might not be accurately identified and/or quantified by PLM. As an example, the original fabrication of vinyl floor tiles routinely involved milling of asbestos fibers to extremely small sizes. As a result, these fibers may go undetected under the standard polarized light microscopy method. Transmission Electron Microscopy (TEM) is required for a more definitive analysis of these materials.

Material which contains trace percent (TR%) asbestos indicates that less than one-percent asbestos by weight was detected, which according to the Environmental Protection Agency would be a non-asbestos containing material. According to the Environmental Protection Agency (EPA), finished drywall systems cannot be composite analyzed.

Laboratory Quality Control Program

MTGL uses NVLAP accredited laboratories that maintain an in-house quality control program. This program involves blind re-analysis of ten percent of all samples, precision and accuracy controls, and use of standard bulk reference materials.

LEAD-BASED PAINT

Lead-based paint testing was conducted in accordance with the Title 17, California Code of Regulations, Division 1, Chapter 8, Accreditation, Certification and Work Practices in Lead-Related Construction, Section 36000 and the United States Department of Housing and Urban Developments *Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing, Chapter 7 Lead-Based Paint Inspections*, as published in June 1995 and revised in 1997.

The State of California, HUD and the EPA currently define lead-based paint as paints or other surface coatings, which contain lead equal to or greater than 1.0 milligrams of lead per square centimeter of surface area (mg/cm²), or equal to or greater than 0.5% by weight.

Lead-based paint was conducted utilizing the INNOVX model DELTA Series which is an X-ray fluorescence (XRF) spectrum analyzer running software version 1.4 or higher, with an X-ray tube utilized in the K&L Spectrum mode to determine the concentration of lead in paint.

The spectrum analyzer is self-calibrated each time the instrument is turned on and/or after a battery change. An initial calibration and ending calibration is validated each day with a laminated Lead Paint Standards testing card which is provided by the manufacturer. The card is a direct comparison to the paint standard to NIST kit SRM2579a with a spectrum analyzer. If an instrument does not maintain consistent calibrations after following the manufacturer's recommendation, the unit is removed from the site and sent back to the manufacturer for service.

In the instance where paint chip samples are collected, sample collections are conducted by the requirements of the American Society of Testing and Materials standard E 1729, Standard Practice for Field Collection of Dried Paint Samples for Lead Determination by Atomic Spectrometry Techniques and HUD Guidelines.

Performance Characteristic Sheet (PCS)

Performance Characteristic Sheets for most XRF models can be found on the U.S. Department of Housing and Urban Developments Office of Healthy Homes and Lead Hazard Control website, specifically HUD Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing. (<http://www.hud.gov/offices/lead/lbp/hudguidelines/index.cfm>)

Operating specification and procedures for the XRF used for this survey can be downloaded at the website above. PCS's can also be obtained by calling toll free to the National Lead Information Clearinghouse, at 800-424-LEAD. Persons with hearing or speech impediments may access the above number via TTY by calling the Federal Information Relay Service at 800-887-8339, toll free.

SECTION 4 Summary of Findings

GENERAL SUMMARY

Asbestos Survey Results

The purpose of the asbestos survey was to evaluate the referenced residence to identify interior and exterior building materials that may contain asbestos. Suspect materials sampled during the survey included:

- 9x9 Vinyl Floor Tile and Associated Flooring Mastic
- 12x12 Vinyl Floor Tile and Associated Flooring Mastic
- Brown Wall Mastic
- Ceiling Plaster
- Drywall/Tape/Joint Compound
- 2x4 and 2x2 Acoustic Ceiling Tiles
- Yellow Filler/Black Flooring Mastic
- Window Putty
- Exterior Stucco
- Roofing Penetration Mastic

Material that contain asbestos were identified in the sample collected for this project. Please refer to the laboratory analysis for a more detailed description of the microscopic analysis of these samples.

The following materials were identified as asbestos containing:

- 9x9 Vinyl Floor Tile (<1% , Trace)
- Black Flooring Mastic
- Stucco Skim Coat (<1%, Trace)

Table 1-Materials That Contain Asbestos

<i>Material* Description</i>	<i>Location*</i>	<i>Approximate Quantity**</i>	<i>Condition</i>	<i>Friability</i>	<i>Exposure Potential</i>	<i>Asbestos Content</i>
9x9 Brown VFT	Room A-1. A7G	Undetermined	Intact	No	Low	None Detected
Black Flooring Mastic	Throughout	Undetermined	Intact	Yes	Low	None Detected
Exterior Stucco	Throughout	Undetermined	Intact	No	Low	None Detected
Penetration Mastics	Throughout Roof	Undetermined	Intact	No	Low	None Detected

***Materials that are similar in color and texture in other locations throughout the facility shall be considered as asbestos containing.**

****MTGL, Inc. is not responsible for actual quantity of the material(s).**

Applicable Standards

Asbestos-containing materials (ACM) are regulated by federal, state, and local agencies, which include but may not be limited to the following:

The EPA National Emission Standards for Hazardous Air Pollutants (NESHAP) requires an inspection for asbestos be done on facilities that are to undergo demolition or renovation work. Materials found to contain asbestos may need to be removed prior to the start of such demolition/renovation work.

A material is considered by the EPA and the State of California to be asbestos-containing if at least one sample collected from the area shows asbestos present in an amount greater than one percent (> 1%). California Code of Regulation 1529 defines asbestos-containing construction materials as materials containing greater than one-tenth of one percent (0.1%) asbestos by weight. Under this code, materials containing between 0.1% and 1% asbestos are regulated as other regulated operations. The California Contractor’s Licensing Board (CCLB) considers material greater than 0.1% asbestos by weight to be ACCM. Although operations involving materials containing between 0.1% and 1% asbestos are not considered Class I, II, or III work, several sections of the standard are applicable, including negative exposure assessments and the use of regulated areas. If materials contain less than 1% asbestos but more than 0.1% asbestos (i.e. “trace” asbestos), the material may be disposed of as non-ACM, but Cal/OSHA requirements would still have to be followed in regards to worker protection and Contractor licensing.

“Trace” materials are currently regulated in California and require the following:

- Removal using wet methods
- Prohibition of removal using abrasive saws or methods which would aerosolize the material.
- Prompt clean-up of materials removed, using HEPA-filtered vacuums, as applicable.
- Employer registration by Cal/OSHA for removal quantities exceeding 100 sq. feet per year.
- Cal/OSHA Carcinogen Registration by the Renovation or Abatement Contractor impacting such materials.

NESHAP defines Category I non-friable asbestos-containing materials as gaskets, resilient floor covering, and asphalt roofing products that contain more than one percent asbestos, and Category II non-friable as any materials, except for Category I non-friable, that contain more than one percent asbestos and can not be reduced to a powder by hand pressure when dry. NESHAP defines a Regulated Asbestos-Containing Material (RACM) as: (a) friable ACM, (b) Category I non-friable that has become friable, (c) Category I non-friable that has or may be subject to sanding, grinding, cutting, or abrading, and (d) Category II non-friable that may or has become friable during demolition or renovation.

MTGL recommends that all asbestos containing materials be removed prior to any renovation and/or demolition activities, which may impact the materials. A Licensed Abatement Contractor in the State of California should perform the removal activities.

If renovation and/or demolition activities do not impact the asbestos containing materials then the materials can be managed in place. Periodic surveillance is recommended. An Operations & Maintenance (O&M) program should be established and conducted by properly trained personnel. Minimum training for each type of material that has been identified should be given as required by Cal/OSHA. Additionally, postings would be required in all publicly accessible areas warning of the potential hazard to satisfy the Proposition 65 & Hazard Communication regulations.

Lead-Based Paint Survey Results

The purpose of the lead-based paint survey was to evaluate the referenced facility to identify building components that may contain asbestos. Suspect components identified during the survey included:

- Interior /Exterior Wall and Ceiling Components
- Interior/Exterior Door and Door Frame Components
- Interior Flooring Components

Lead-based paint/coatings **were not** found during the survey. When evaluating this report, it is assumed that according to Chapter 7 HUD guidelines, that if one testing combination (i.e window, door) is positive for lead in an interior or exterior room equivalent, that all other similar testing combinations in those areas are assumed to be positive.

Applicable Standards:

Current EPA and Cal/EPA regulations do not require lead-based paint to be removed prior to demolition, unless found to be loose and peeling. Provided that paints are securely adhered to the substrates, disposal of the debris can be handled in California as non-hazardous and non-RCRA waste, pending characterization of the waste. Loose and peeling paints or other wastes exceeding the Total Threshold Level Concentration (TTLC) of 1,000 ppm ($\mu\text{g/g}$) would be required to be disposed of as non-RCRA hazardous waste. However, if the leachable lead contents of the waste exceed the Soluble Threshold Level Concentrations (STLC) of 5 mg/liter, the wastes must be disposed of as RCRA waste.

Several government agencies have definitions for what amount of lead constitutes paint to be considered “lead-based”. The Department of Housing and Urban Development (HUD) has designated the amount to be 1.0 mg/cm² 0.5% by weight or 5000 ppm (parts per million). The HUD regulations are related to potential hazards in the home environment and not to construction activities. The amount designated for high contact play areas is 400 ppm.

The Consumer Product Safety Commission (CPSC) has defined lead-based paint as surface coatings containing lead concentrations greater than 600 ppm. In 1978, the CPSC banned the sale of lead-based paint to consumers and the use of lead-based paint in residences and public buildings.

Please note that the detection of any amount of lead in the paint will trigger numerous requirements from the California Occupations Safety and Health Administration (Cal-OSHA) lead in construction standard (e.g., Title 8, CCR Section 1532.1), even with common tasks such as drywall demolition, manual paint scraping, and manual paint sanding. The employer is required to conduct air sampling to determine the exposure to lead during these tasks and during other tasks that could result in lead exposure. Until actual exposures are determined, workers are

required to wear respirators that are appropriate to the task. Detailed requirements are published in the Cal-OSHA standard for lead in construction.

All workers who may be exposed to lead must be trained in the hazards of lead. The results of air sampling are used to determine if workers are exposed to lead above the action level (AL) of 30 micrograms per cubic meter of air or above the permissible exposure limit (PEL) of 50 micrograms of lead per cubic meter of air, averaged over an 8-hour shift. Exposures above the AL or PEL will trigger additional requirements including engineering controls, proper housekeeping, washing facilities for hand and face washing, additional worker training, respiratory protection, medical monitoring, and additional air sampling. The employer must have a written compliance plan.

SECTION 5 Hazard Control and Abatement Options

Asbestos

The identified asbestos containing materials found on interior and exterior of the building pose a low health risk to the building occupants in its current state and location. Renovation activities that involves the disturbance and/or removal of regulated asbestos containing materials must be conducted by a Licensed Asbestos Abatement Contractor. Any materials that will remain in place during and/or after renovation activities are required to be maintained in and ongoing Operations and Maintenance Program to monitor and/or repair damaged asbestos containing materials to prevent occupational exposure.

Lead Paint

Interim controls which are temporary measures may include the following:

- Paint Film Stabilization: “scrape off the loose and flakey paint and reapply with regular house paint”.
- Friction (places that rub) and Impact (places that are bumped or banged) Surface Treatments (Doors, windows, cabinets, floors, etc): treated by covering the surfaces with an abrasion-resistant material, or by repairing to an intact working condition in order to minimize dust.
- Special Cleaning: reduction of lead hazard by cleaning up visible dust by HEPA vacuuming, washing and HEPA vacuuming again.

Interim controls typically last less than 20 years and will require the reevaluation of components on a periodic basis.

As of April 22, 2010, the EPA passed the Renovator, Repair and Paint Rule (RRP) (*40 CFR Part 745.90*) which states all renovation and painting contractors and other trades who work in pre-1978 housing and who might disturb painted surfaces must become Lead Certified Renovators by taking a one-day course about using "Lead Safe Work Practices" on the job.

Abatement methods which eliminate or put a barrier in front of lead hazards may include the following:

- Encapsulation: covering lead paint with a special liquid or thick coating (not regular paint). Works well on surfaces that are in good condition and should not be used on friction or impact surfaces.
- Enclosure: covering lead paint with a solid, dust-tight barrier that is usually mechanically attached (sheetrock, paneling, drywall).

- Replacement: removal of lead covered components (doors, windows, molding) and replacing with lead free components.
- Removal: recommended when other options may not be feasible; removal of lead paint by means of heat guns, scraping and sanding, power tools, chemical stripping and/or use of abrasives and hydro blasting.

Abatement controls typically last more than 20 years. Abatement methods that will result in the smallest amount of dust generated are preferred. Workers who partake in the above abatement methods should be California State Certified Lead Supervisors and Workers.

Clearance sampling after abatement must be conducted by a certified lead-based paint inspector

Lead Safe Work Practice Requirements for Maintenance, Renovation or Remodeling

Lead-based paint, deteriorated paint or lead-based hazards have been identified and require lead safe work practices. These practices are necessary for regular lead based paint hazard controls, repair, remodeling, renovation or other work activities that may disturb lead based paint above HUD's de minimis levels. HUD describes de minimis levels as follows:

- 20 square feet on exterior surfaces
- 2 square feet in any one interior room or space
- 10% of a type of building component with a small surface area (such as painted windowsills) on interior or exterior surfaces

Workers who may disturb lead-based paint above the de minimis level during repair, renovation or maintenance activities or any other work efforts that disturbs a known or assumed lead-based paint above HUD's de minimis shall be trained in lead safe work practices.

Firms providing abatement services must be certified as an abatement firm by the EPA or the State. Workers conducting abatement must be trained and certified as abatement workers by a training provider accredited by the EPA or State.

SECTION 6 DISCLOSURE

A copy of this summary must be provided to new lessees (tenants) and purchasers of this property under Federal Law (24 CFR part 35 and 40 CFR part 745) before they become obligated under a lease or sales contract. The complete report must also be provided to new purchasers and it must be made available to new tenants. Landlords (lessors) and sellers are also required to distribute an educational pamphlet and include standard warning language in their leases or sales contracts to ensure that parents have the information they need to protect their children from lead-based paint hazards.

It is the owner's legal obligation to disclose the inspection results to tenants and/or purchasers before obligation under 24 CFR part 35 and 40 CFR part 745 (published in the Federal Register, Volume 61, Number 45, March 6, 1996, starting on P. 9064; copies of the regulations and related materials can be obtained from the National Lead Information Center Clearinghouse, (1-800-424-LEAD)).

SECTION 7
Appendices

Appendix 1

Asbestos Analysis Results and Chain of Custody



Report for:

Mr. Henry Lee, Mr. Carl Tucker
MTGL, Inc.
6295 Ferris Square
Suite C
San Diego, CA 92121

Regarding: Project: Palomar Coll- Bldg-A
EML ID: 1274138

Approved by:

Approved Signatory
Diane Green

Dates of Analysis:
Asbestos PLM: 10-09-2014

Service SOPs: Asbestos PLM (EPA Methods 600/R-93/116 & 600/M4-82-020, SOP EM-AS-S-1267)

All samples were received in acceptable condition unless noted in the Report Comments portion in the body of the report. The results relate only to the items tested. The results include an inherent uncertainty of measurement associated with estimating percentages by polarized light microscopy. Measurement uncertainty data for sample results with >1% asbestos concentration can be provided when requested.

EMLab P&K ("the Company") shall have no liability to the client or the client's customer with respect to decisions or recommendations made, actions taken or courses of conduct implemented by either the client or the client's customer as a result of or based upon the Test Results. In no event shall the Company be liable to the client with respect to the Test Results except for the Company's own willful misconduct or gross negligence nor shall the Company be liable for incidental or consequential damages or lost profits or revenues to the fullest extent such liability may be disclaimed by law, even if the Company has been advised of the possibility of such damages, lost profits or lost revenues. In no event shall the Company's liability with respect to the Test Results exceed the amount paid to the Company by the client therefor.

Client: MTGL, Inc.
 C/O: Mr. Henry Lee, Mr. Carl Tucker
 Re: Palomar Coll- Bldg-A

Date of Sampling: 10-03-2014
 Date of Receipt: 10-08-2014
 Date of Report: 10-09-2014

ASBESTOS PLM REPORT: EPA-600/M4-82-020 & EPA METHOD 600/R-93-116

Total Samples Submitted: 3
Total Samples Analysed: 3
Total Samples with Layer Asbestos Content > 1%: 0

Location: 1A, Plaster

Lab ID-Version‡: 5799153-1

Sample Layers	Asbestos Content
Light Brown Plaster	ND
Sample Composite Homogeneity: Good	

Location: 2A, Plaster

Lab ID-Version‡: 5799154-1

Sample Layers	Asbestos Content
Light Brown Plaster	ND
Sample Composite Homogeneity: Good	

Location: 3A, Plaster

Lab ID-Version‡: 5799155-1

Sample Layers	Asbestos Content
Light Brown Plaster	ND
Sample Composite Homogeneity: Good	

The test report shall not be reproduced except in full, without written approval of the laboratory. The report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the federal government. EMLab P&K reserves the right to dispose of all samples after a period of thirty (30) days, according to all state and federal guidelines, unless otherwise specified.

Inhomogeneous samples are separated into homogeneous subsamples and analyzed individually. ND means no fibers were detected. When detected, the minimum detection and reporting limit is less than 1% unless point counting is performed. Floor tile samples may contain large amounts of interference material and it is recommended that the sample be analyzed by gravimetric point count analysis to lower the detection limit and to aid in asbestos identification.

‡ A "Version" indicated by "-x" after the Lab ID# with a value greater than 1 indicates a sample with amended data. The revision number is reflected by the value of "x".



Report for:

Mr. Henry Lee, Mr. Carl Tucker
MTGL, Inc.
6295 Ferris Square
Suite C
San Diego, CA 92121

Regarding: Project: Bldg-A; Palomar College
EML ID: 1265687

Approved by:

Approved Signatory
Diane Green

Dates of Analysis:
Asbestos PLM: 09-25-2014

Service SOPs: Asbestos PLM (EPA Methods 600/R-93/116 & 600/M4-82-020, SOP EM-AS-S-1267)

All samples were received in acceptable condition unless noted in the Report Comments portion in the body of the report. The results relate only to the items tested. The results include an inherent uncertainty of measurement associated with estimating percentages by polarized light microscopy. Measurement uncertainty data for sample results with >1% asbestos concentration can be provided when requested.

EMLab P&K ("the Company") shall have no liability to the client or the client's customer with respect to decisions or recommendations made, actions taken or courses of conduct implemented by either the client or the client's customer as a result of or based upon the Test Results. In no event shall the Company be liable to the client with respect to the Test Results except for the Company's own willful misconduct or gross negligence nor shall the Company be liable for incidental or consequential damages or lost profits or revenues to the fullest extent such liability may be disclaimed by law, even if the Company has been advised of the possibility of such damages, lost profits or lost revenues. In no event shall the Company's liability with respect to the Test Results exceed the amount paid to the Company by the client therefor.

Client: MTGL, Inc.
 C/O: Mr. Henry Lee, Mr. Carl Tucker
 Re: Bldg-A; Palomar College

Date of Sampling: 09-18-2014
 Date of Receipt: 09-23-2014
 Date of Report: 09-25-2014

ASBESTOS PLM REPORT: EPA-600/M4-82-020 & EPA METHOD 600/R-93-116

Total Samples Submitted: 43
Total Samples Analysed: 43
Total Samples with Layer Asbestos Content > 1%: 8

Location: 1, 9x9 FT/mastic blk/beige

Lab ID-Version‡: 5760702-1

Sample Layers	Asbestos Content
Brown Floor Tile	< 1% Chrysotile
Black Mastic	3% Chrysotile
Sample Composite Homogeneity:	Good

Location: 2, 9x9 FT/mastic blk/beige

Lab ID-Version‡: 5760703-1

Sample Layers	Asbestos Content
Brown Floor Tile	< 1% Chrysotile
Black Mastic	3% Chrysotile
Sample Composite Homogeneity:	Good

Location: 3, 9x9 FT/mastic blk/beige

Lab ID-Version‡: 5760704-1

Sample Layers	Asbestos Content
Brown Floor Tile	< 1% Chrysotile
Black Mastic	3% Chrysotile
Sample Composite Homogeneity:	Good

Location: 4, 12x12 FT/white spec.

Lab ID-Version‡: 5760705-1

Sample Layers	Asbestos Content
Off-White Floor Tile	ND
Yellow Mastic	ND
Sample Composite Homogeneity:	Good

The test report shall not be reproduced except in full, without written approval of the laboratory. The report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the federal government. EMLab P&K reserves the right to dispose of all samples after a period of thirty (30) days, according to all state and federal guidelines, unless otherwise specified.

Inhomogeneous samples are separated into homogeneous subsamples and analyzed individually. ND means no fibers were detected. When detected, the minimum detection and reporting limit is less than 1% unless point counting is performed. Floor tile samples may contain large amounts of interference material and it is recommended that the sample be analyzed by gravimetric point count analysis to lower the detection limit and to aid in asbestos identification.

‡ A "Version" indicated by "-x" after the Lab ID# with a value greater than 1 indicates a sample with amended data. The revision number is reflected by the value of "x".

Client: MTGL, Inc.
 C/O: Mr. Henry Lee, Mr. Carl Tucker
 Re: Bldg-A; Palomar College

Date of Sampling: 09-18-2014
 Date of Receipt: 09-23-2014
 Date of Report: 09-25-2014

ASBESTOS PLM REPORT: EPA-600/M4-82-020 & EPA METHOD 600/R-93-116

Location: 5, 12x12 FT/white spec.

Lab ID-Version‡: 5760706-1

Sample Layers	Asbestos Content
Off-White Floor Tile	ND
Yellow Mastic	ND
Sample Composite Homogeneity: Good	

Location: 6, 12x12 FT/white spec.

Lab ID-Version‡: 5760707-1

Sample Layers	Asbestos Content
Off-White Floor Tile	ND
Sample Composite Homogeneity: Good	

Location: 7, Brown wall mastic

Lab ID-Version‡: 5760708-1

Sample Layers	Asbestos Content
Brown Mastic	ND
Sample Composite Homogeneity: Good	

Location: 8, Brown wall mastic

Lab ID-Version‡: 5760709-1

Sample Layers	Asbestos Content
Brown Mastic	ND
Sample Composite Homogeneity: Good	

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Client: MTGL, Inc.
 C/O: Mr. Henry Lee, Mr. Carl Tucker
 Re: Bldg-A; Palomar College

Date of Sampling: 09-18-2014
 Date of Receipt: 09-23-2014
 Date of Report: 09-25-2014

ASBESTOS PLM REPORT: EPA-600/M4-82-020 & EPA METHOD 600/R-93-116

Location: 9, Brown wall mastic

Lab ID-Version‡: 5760710-1

Sample Layers	Asbestos Content
Brown Mastic	ND
Sample Composite Homogeneity: Good	

Location: 10, Ceiling plaster

Lab ID-Version‡: 5760711-1

Sample Layers	Asbestos Content
Off-White Plaster	ND
Sample Composite Homogeneity: Good	

Location: 11, Ceiling plaster

Lab ID-Version‡: 5760712-1

Sample Layers	Asbestos Content
Off-White Plaster	ND
Sample Composite Homogeneity: Good	

Location: 12, Ceiling plaster

Lab ID-Version‡: 5760713-1

Sample Layers	Asbestos Content
Off-White Plaster	ND
Sample Composite Homogeneity: Good	

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Client: MTGL, Inc.
 C/O: Mr. Henry Lee, Mr. Carl Tucker
 Re: Bldg-A; Palomar College

Date of Sampling: 09-18-2014
 Date of Receipt: 09-23-2014
 Date of Report: 09-25-2014

ASBESTOS PLM REPORT: EPA-600/M4-82-020 & EPA METHOD 600/R-93-116

Location: 13, CT 2x4

Lab ID-Version‡: 5760714-1

Sample Layers	Asbestos Content
Tan Ceiling Tile with White Surface	ND
Composite Non-Asbestos Content:	48% Cellulose
Sample Composite Homogeneity:	Good

Location: 14, DW mud and tape

Lab ID-Version‡: 5760715-1

Sample Layers	Asbestos Content
White Compound with Paint	ND
Sample Composite Homogeneity:	Good

Location: 15, Black mastic

Lab ID-Version‡: 5760716-1

Sample Layers	Asbestos Content
Black Mastic	3% Chrysotile
Sample Composite Homogeneity:	Good

Location: 16, 12x12 FT/black mastic

Lab ID-Version‡: 5760717-1

Sample Layers	Asbestos Content
Pink Floor Tile	ND
Black Mastic	ND
Sample Composite Homogeneity:	Good

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Client: MTGL, Inc.
 C/O: Mr. Henry Lee, Mr. Carl Tucker
 Re: Bldg-A; Palomar College

Date of Sampling: 09-18-2014
 Date of Receipt: 09-23-2014
 Date of Report: 09-25-2014

ASBESTOS PLM REPORT: EPA-600/M4-82-020 & EPA METHOD 600/R-93-116

Location: 17, 12x12 FT/black mastic

Lab ID-Version‡: 5760718-1

Sample Layers	Asbestos Content
Pink Floor Tile	ND
Black Mastic	ND
Off-White Compound	ND
Sample Composite Homogeneity:	Good

Location: 18, 12x12 FT/black mastic

Lab ID-Version‡: 5760719-1

Sample Layers	Asbestos Content
Pink Floor Tile	ND
Black Mastic	ND
Off-White Compound	ND
Sample Composite Homogeneity:	Good

Location: 19, 2x2 CT

Lab ID-Version‡: 5760720-1

Sample Layers	Asbestos Content
Tan Ceiling Tile with White Surface	ND
Composite Non-Asbestos Content:	55% Cellulose
Sample Composite Homogeneity:	Good

Location: 20, 2x2 CT

Lab ID-Version‡: 5760721-1

Sample Layers	Asbestos Content
Tan Ceiling Tile with White Surface	ND
Composite Non-Asbestos Content:	48% Cellulose
Sample Composite Homogeneity:	Good

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Client: MTGL, Inc.
 C/O: Mr. Henry Lee, Mr. Carl Tucker
 Re: Bldg-A; Palomar College

Date of Sampling: 09-18-2014
 Date of Receipt: 09-23-2014
 Date of Report: 09-25-2014

ASBESTOS PLM REPORT: EPA-600/M4-82-020 & EPA METHOD 600/R-93-116

Location: 21, Yellow filler/blk mastic

Lab ID-Version‡: 5760722-1

Sample Layers	Asbestos Content
Yellow Mastic	ND
Off-White Compound	ND
Black Mastic	2% Chrysotile
Sample Composite Homogeneity:	Good

Location: 22, 2x4 CT

Lab ID-Version‡: 5760723-1

Sample Layers	Asbestos Content
Tan Ceiling Tile with White Surface	ND
Composite Non-Asbestos Content:	48% Cellulose
Sample Composite Homogeneity:	Good

Location: 23, 2x4 CT

Lab ID-Version‡: 5760724-1

Sample Layers	Asbestos Content
Tan Ceiling Tile with White Surface	ND
Composite Non-Asbestos Content:	48% Cellulose
Sample Composite Homogeneity:	Good

Location: 24, 2x4 CT

Lab ID-Version‡: 5760725-1

Sample Layers	Asbestos Content
Tan Ceiling Tile with White Surface	ND
Composite Non-Asbestos Content:	48% Cellulose
Sample Composite Homogeneity:	Good

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Client: MTGL, Inc.
 C/O: Mr. Henry Lee, Mr. Carl Tucker
 Re: Bldg-A; Palomar College

Date of Sampling: 09-18-2014
 Date of Receipt: 09-23-2014
 Date of Report: 09-25-2014

ASBESTOS PLM REPORT: EPA-600/M4-82-020 & EPA METHOD 600/R-93-116

Location: 25, 12x12 FT/blk mastic

Lab ID-Version‡: 5760726-1

Sample Layers	Asbestos Content
Pink Floor Tile	ND
Black Mastic	ND
Sample Composite Homogeneity: Good	

Location: 26, 12x12 FT/blk mastic

Lab ID-Version‡: 5760727-1

Sample Layers	Asbestos Content
Pink Floor Tile	ND
Black Mastic	ND
Sample Composite Homogeneity: Good	

Location: 27, 12x12 FT/blk mastic

Lab ID-Version‡: 5760728-1

Sample Layers	Asbestos Content
Pink Floor Tile	ND
Black Mastic	ND
Sample Composite Homogeneity: Good	

Location: 28, DW mud and tape

Lab ID-Version‡: 5760729-1

Sample Layers	Asbestos Content
Off-White Compound with Paint	ND
Sample Composite Homogeneity: Good	

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 C/O: Mr. Henry Lee, Mr. Carl Tucker
 Re: Bldg-A; Palomar College

Date of Sampling: 09-18-2014
 Date of Receipt: 09-23-2014
 Date of Report: 09-25-2014

ASBESTOS PLM REPORT: EPA-600/M4-82-020 & EPA METHOD 600/R-93-116

Location: 29, Yellow and blk mastic

Lab ID-Version‡: 5760730-1

Sample Layers	Asbestos Content
Black/Yellow Mastic	2% Chrysotile
Sample Composite Homogeneity: Good	

Location: 30, Yellow and blk mastic

Lab ID-Version‡: 5760731-1

Sample Layers	Asbestos Content
Black/Yellow Mastic	2% Chrysotile
Sample Composite Homogeneity: Good	

Location: 31, Window putty

Lab ID-Version‡: 5760732-1

Sample Layers	Asbestos Content
Cream Window Putty with Silver Paint	ND
Gray Window Putty	ND
Sample Composite Homogeneity: Good	

Location: 32, Window putty

Lab ID-Version‡: 5760733-1

Sample Layers	Asbestos Content
Cream Window Putty with Silver Paint	ND
Light Brown Putty	ND
Sample Composite Homogeneity: Good	

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 C/O: Mr. Henry Lee, Mr. Carl Tucker
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Date of Sampling: 09-18-2014
 Date of Receipt: 09-23-2014
 Date of Report: 09-25-2014

ASBESTOS PLM REPORT: EPA-600/M4-82-020 & EPA METHOD 600/R-93-116

Location: 33, Window putty

Lab ID-Version‡: 5760734-1

Sample Layers	Asbestos Content
Cream Window Putty with Paint	ND
Light Brown Window Putty	ND
Sample Composite Homogeneity: Good	

Location: 34, Stucco

Lab ID-Version‡: 5760735-1

Sample Layers	Asbestos Content
Green Skim Coat	< 1% Chrysotile
Gray Stucco	ND
Sample Composite Homogeneity: Good	

Location: 35, Stucco

Lab ID-Version‡: 5760736-1

Sample Layers	Asbestos Content
Green Skim Coat	< 1% Chrysotile
Gray Stucco	ND
Sample Composite Homogeneity: Good	

Location: 36, Stucco

Lab ID-Version‡: 5760737-1

Sample Layers	Asbestos Content
Green Skim Coat	< 1% Chrysotile
Gray Stucco	ND
Sample Composite Homogeneity: Good	

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 C/O: Mr. Henry Lee, Mr. Carl Tucker
 Re: Bldg-A; Palomar College

Date of Sampling: 09-18-2014
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 Date of Report: 09-25-2014

ASBESTOS PLM REPORT: EPA-600/M4-82-020 & EPA METHOD 600/R-93-116

Location: 37, Stucco

Lab ID-Version‡: 5760738-1

Sample Layers	Asbestos Content
Yellow Skim Coat	ND
Gray Stucco	ND
Sample Composite Homogeneity: Good	

Location: 38, Stucco

Lab ID-Version‡: 5760739-1

Sample Layers	Asbestos Content
Yellow Skim Coat	ND
Gray Stucco	ND
Sample Composite Homogeneity: Good	

Location: 39, Stucco

Lab ID-Version‡: 5760740-1

Sample Layers	Asbestos Content
Yellow Skim Coat	ND
Gray Stucco	ND
Sample Composite Homogeneity: Good	

Location: 40, 9x9 FT/blk mastic

Lab ID-Version‡: 5760741-1

Sample Layers	Asbestos Content
Tan Mastic	ND
Brown Floor Tile	< 1% Chrysotile
Black Mastic	3% Chrysotile
Sample Composite Homogeneity: Good	

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Client: MTGL, Inc.
 C/O: Mr. Henry Lee, Mr. Carl Tucker
 Re: Bldg-A; Palomar College

Date of Sampling: 09-18-2014
 Date of Receipt: 09-23-2014
 Date of Report: 09-25-2014

ASBESTOS PLM REPORT: EPA-600/M4-82-020 & EPA METHOD 600/R-93-116

Location: 41, Penetration mastic

Lab ID-Version‡: 5760742-1

Sample Layers	Asbestos Content
Black Mastic with Silver Paint	ND
Composite Non-Asbestos Content:	8% Cellulose
Sample Composite Homogeneity:	Good

Location: 42, Penetration mastic

Lab ID-Version‡: 5760743-1

Sample Layers	Asbestos Content
Black Mastic with White Paint	ND
Composite Non-Asbestos Content:	8% Cellulose
Sample Composite Homogeneity:	Good

Location: 43, Penetration mastic

Lab ID-Version‡: 5760744-1

Sample Layers	Asbestos Content
Black Mastic	ND
Composite Non-Asbestos Content:	10% Glass Fibers
Sample Composite Homogeneity:	Good

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www.EMLabPK.com



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Phoenix, AZ: 1901 West Knickerbocker, Phoenix, AZ 85027 * (602) 651-4892
San Bruno, CA: 1190 Bayhill Drive, #100, San Bruno, CA 94066 * (650) 886-6555

Weather	Fog	Rain	Snow	Wind	Clear
None	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Light	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Moderate	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Heavy	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>



CONTACT INFORMATION

Company: MEL, Inc. Address: 6995 Pearis Square C
 Contact: Henry Lim Special Instructions:
 Phone: 951-844-8478

PROJECT INFORMATION

Project ID: Talamar College - Bldg-A STD - Standard (DEFAULT)
 Project Description: Bldg-A NO - Next Business Day
 Project Zip Code: 91814 SD - Same Business Day Rust
 PO Number: WHI - Weekend / Holiday

Sample ID	Sample Description	Sample Type	Test Method	Test Results
1	9x9 FT/Mastic BK (Beige)	B	RM-A-1	ND
2	9x9 FT/Mastic BK (Beige)	B	RM-A-1	ND
3	9x9 FT/BK Mastic (Beige)	B	RM-A-1	ND
4	12x12 FT/white spec.	B	RM-A-1	ND
5	12x12 FT/white spec.	B	RM-A-1	ND
6	12x12 FT/white spec.	B	RM-A-1	ND
7	Brown wall Mastic	B	RM-A-1	ND
8	Brown wall Mastic	B	RM-A-1	ND
9	Brown wall Mastic	B	RM-A-1	ND
10	Ceiling plaster	B	RM-A-1	ND
11	Ceiling plaster	B	RM-A-1	ND

Non-Culturable	Spore Trap	Direct Exam	Quantitative	1-Media Surface Fungi	2-Media Surface Fungi	3-Media Surface Fungi	Culturable Air Fungi	Gram Stain & Counts	Lagonele culture	Total Coliform, E. coli	Membrane Filtration	MPN Bacteria	Quantitray - Sewage Screen	Asbestos Analysis - PCM	Asbestos Analysis - PLM	PCR	Specify Service
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

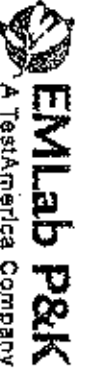
ANALYSIS INFORMATION

BC - BioCassette™ ST - Spore Trap Zefon T - Tape SW - Swab D - Dist
 A15 - Anderson A16 - Andersen Burkard ...
 S46 - Surface Air Sampler P - Petriable Media B - Bulk SO - Soil
 CP - Contact Plate NP - Non-Petriable Media O - Other

Analyst: Henry Lim Date: 9/23/14
 Signature: [Signature] Date: 9/23/14

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Phoenix, AZ: 1501 West Knudsen Drive, Phoenix, AZ 85027 • (602) 851-4912
San Bruno, CA: 1150 Bayhill Drive, #100, San Bruno, CA 94066 • (650) 898-0533

Weather	Fog	Rain	Snow	Wind	Clear
None	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Light	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Moderate	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Heavy	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

REC'D
1265687

Biocassette™, Andersen, SAS, Swab, Water, Bulk, Dust, Soil, Contact Plate

CONTACT INFORMATION

Company: M/S/T Inc. Address: 6075 Fenwick Square C
 Contact: Henry Lowy Special Instructions:
 Phone: 951-834-8048

PROJECT INFORMATION

Project ID: Talmonae College - STD - Standard (DEFAULT)
 Description: Bldg-A ND - Next Business Day
 Project Zip Code: 918-14 SD - Same Business Day Rush
 PO Number: WH - Weekend / Holiday

TURNAROUND TIME CODES (TAT)

Room ID	Location	Room	Time	Sampled
12	Ceiling	Plaster	PM-1-1	<input type="checkbox"/>
13	OT	Grwy	PM-A-19	<input type="checkbox"/>
14	DD	MAR E TAPE	PM-A-18	<input type="checkbox"/>
15	Black	MASK	PM-A-18	<input type="checkbox"/>
16	Black	FT / Black Mastic	PM-A-18	<input type="checkbox"/>
17	Black	FT / Black Mastic	PM-A-18	<input type="checkbox"/>
18	Black	FT / Black Mastic	PM-A-18	<input type="checkbox"/>
19	Black	FT	PM-A-18	<input type="checkbox"/>
20	Black	FT	PM-A-17	<input type="checkbox"/>
21	Yellow	filled / BIK Mastic	PM-A-15	<input type="checkbox"/>
22	Black	FT	PM-A-15	<input type="checkbox"/>

<input type="checkbox"/>	Fungi - Spore Trap Analysis	<input type="checkbox"/>
<input type="checkbox"/>	Spore Trap Analysis - Other particles	<input type="checkbox"/>
<input type="checkbox"/>	Direct Microscopic Exam (Qualitative)	<input type="checkbox"/>
<input type="checkbox"/>	Quantitative Spore Count Direct Exam	<input type="checkbox"/>
<input type="checkbox"/>	1-Media Surface Fungi (Genus ID + Asp spp.)	<input type="checkbox"/>
<input type="checkbox"/>	2-Media Surface Fungi (Genus ID + Asp spp.)	<input type="checkbox"/>
<input type="checkbox"/>	3-Media Surface Fungi (Genus ID + Asp spp.)	<input type="checkbox"/>
<input type="checkbox"/>	Culturable Air Fungi (Genus ID + Asp spp.)	<input type="checkbox"/>
<input type="checkbox"/>	Gram Stain & Counts (Culturable Air & Surface Bacteria)	<input type="checkbox"/>
<input type="checkbox"/>	Legionella culture	<input type="checkbox"/>
<input type="checkbox"/>	Total Coliform, E. coli (Presence/Absence)	<input type="checkbox"/>
<input type="checkbox"/>	Membrane Filtration (specify organism):	<input type="checkbox"/>
<input type="checkbox"/>	MPN Bacteria (specify organism):	<input type="checkbox"/>
<input type="checkbox"/>	QuantTray - Sewage Screen	<input type="checkbox"/>
<input type="checkbox"/>	Asbestos Analysis - PCM Airborne Fiber Count (NIOSH 7400)	<input checked="" type="checkbox"/>
<input type="checkbox"/>	Asbestos Analysis - PLM (EPA method 600/4-93-116)	<input checked="" type="checkbox"/>
<input type="checkbox"/>	PCR (specify test):	<input type="checkbox"/>
<input type="checkbox"/>	Specify Service	<input type="checkbox"/>

By submitting this Chain of Custody, you agree to be bound by the terms and conditions set forth at <http://www.emlab.com/chainofcustody.htm>

Signature: Henry Lowy Date: 9/18/14 Initials: HL

Signature: [Signature] Date: 9/25/14 Initials: [Initials]

CHAIN OF CUSTODY
www.EMLabP&K.com



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 Phoenix, AZ: 1501 West Knudsen Drive, Phoenix, AZ 85027 • (602) 691-4802
 San Bruno, CA: 1160 Bayhill Drive, #100, San Bruno, CA 94088 • (995) 888-6583

Weather	Fog	Rain	Snow	Wind	Clear
None	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Light	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Medium	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Heavy	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

CONTACT INFORMATION

Company: MSEL, Inc. Address: 6035 FALLS SQUARE C
 Contact: Henry Campbell Special Instructions:
 Phone: 951-841-8078

PROJECT INFORMATION

Project ID: Talomon College - Bldg-A STD - Standard (DEFAULT)
 Project Description: Bldg-A ND - Next Business Day
 Project Zip Code: 91814 SD - Same Business Day Rush
 PO Number: WH - Weekend / Holiday

TERMINAL ROOMING TIMECODES

Project ID	Project Description	Project Zip Code	Sampling Date & Time	By	STD - Standard (DEFAULT)	ND - Next Business Day	SD - Same Business Day Rush	WH - Weekend / Holiday
03	2X10 CT				ND	PM-A-13		
04	2X10 CT				ND	PM-A-13		
05	2X10 FT LK MASTIC				ND	PM-A-13		
06	2X12 FT LK MASTIC				ND	PM-A-13		
07	12X18 FT LK MASTIC				ND	PM-A-13		
08	2x10 mud & tape				ND	PM-A-13		
09	yellow 2x10 Mastic				ND	PM-A-13		
30	yellow 2x10 Mastic				ND	PM-A-17		
31	blinded party				ND	PM-A-17		
32	blinded party				ND	PM-A-17		
33	blinded party				ND	PM-A-17		

Non-Optional: Spore Trap Analysis
 Spore Trap Analysis - Other particles
 Direct Microscopic Exam (Qualitative)
 Quantitative Spore Count Direct Exam
 1-Media Surface Fungi (Genus ID + Asp. spp.)
 2-Media Surface Fungi (Genus ID + Asp. spp.)
 3-Media Surface Fungi (Genus ID + Asp. spp.)
 Culturable Air Fungi (Genus ID + Asp. spp.)
 Gram Stain & Counts (Culturable Air & Surface Bacteria)
 Legionella culture
 Total Coliform, E. coli (Presence/Absence)
 Membrane Filtration (specify organism):
 MPN Bacteria (specify organism):
 QuantiTray - Sewage Screen
 Asbestos Analysis - PCM Airborne Fiber Count (NIOSH 7400)
 Asbestos Analysis - PLM (EPA method 5009-93-116)
 PCR (specify test):
 Specify Service

By submitting this Chain of Custody, you agree to be bound by the terms and conditions set forth at <http://www.emlab.com/chainofcustody.html>

Signature: Henry Campbell Date: 9/23/14

Signature: [Signature] Date: 9/23/14

Appendix 2

XRF Data Sheet

Appendix 3

Performance Characteristic Sheet

Performance Characteristic Sheet

EFFECTIVE DATE: December 1, 2006

EDITION NO.: 1

MANUFACTURER AND MODEL:

Make: *Innov-X Systems, Inc.*
 Models: *LBP4000 with software version 1.4 and higher*
 Source: *X-ray tube*

FIELD OPERATION GUIDANCE

OPERATING PARAMETERS:

Inspection mode, variable reading time.

XRF CALIBRATION CHECK LIMITS:

1.0 to 1.1 mg/cm² (inclusive)

SUBSTRATE CORRECTION:

Not applicable

INCONCLUSIVE RANGE OR THRESHOLD:

INSPECTION MODE READING DESCRIPTION	SUBSTRATE	INCONCLUSIVE RANGE (mg/cm ²)
Results not corrected for substrate bias on any substrate	Brick	0.6 to 1.1
	Concrete	0.6 to 1.1
	Drywall	0.6 to 1.1
	Metal	0.6 to 1.1
	Plaster	0.6 to 1.1
	Wood	0.6 to 1.1

BACKGROUND INFORMATION

EVALUATION DATA SOURCE AND DATE:

This sheet is supplemental information to be used in conjunction with Chapter 7 of the HUD *Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing* ("HUD Guidelines"). Performance parameters shown on this sheet are calculated from the EPA/HUD evaluation using archived building components. Testing was conducted on 146 test locations, with two separate instruments, in December 2005.

OPERATING PARAMETERS:

Performance parameters shown in this sheet are applicable only when properly operating the instrument using the manufacturer's instructions and procedures described in Chapter 7 of the HUD Guidelines.

XRF CALIBRATION CHECK:

The calibration of the XRF instrument should be checked using the paint film nearest 1.0 mg/cm² in the NIST Standard Reference Material (SRM) used (e.g., for NIST SRM 2579, use the 1.02 mg/cm² film).

If the average (rounded to 1 decimal place) of three readings is outside the acceptable calibration check range, follow the manufacturer's instructions to bring the instrument into control before XRF testing proceeds.

SUBSTRATE CORRECTION VALUE COMPUTATION:

Chapter 7 of the HUD Guidelines provides guidance on correcting XRF results for substrate bias. Supplemental guidance for using the paint film nearest 1.0 mg/cm² for substrate correction is provided:

XRF results are corrected for substrate bias by subtracting from each XRF result a correction value determined separately in each house for single-family housing or in each development for multifamily housing, for each substrate. The correction value is an average of XRF readings taken over the NIST SRM paint film nearest to 1.0 mg/cm² at test locations that have been scraped bare of their paint covering. Compute the correction values as follows:

Using the same XRF instrument, take three readings on a bare substrate area covered with the NIST SRM paint film nearest 1 mg/cm². Repeat this procedure by taking three more readings on a second bare substrate area of the same substrate covered with the NIST SRM.

Compute the correction value for each substrate type where XRF readings indicate substrate correction is needed by computing the average of all six readings as shown below.

For each substrate type (the 1.02 mg/cm² NIST SRM is shown in this example; use the actual lead loading of the NIST SRM used for substrate correction):

$$\text{Correction value} = (1\text{st} + 2\text{nd} + 3\text{rd} + 4\text{th} + 5\text{th} + 6\text{th Reading}) / 6 - 1.02 \text{ mg/cm}^2$$

Repeat this procedure for each substrate requiring substrate correction in the house or housing development.

EVALUATING THE QUALITY OF XRF TESTING:

Randomly select ten testing combinations for retesting from each house or from two randomly selected units in multifamily housing.

Conduct XRF re-testing at the ten testing combinations selected for retesting.

Determine if the XRF testing in the units or house passed or failed the test by applying the steps below.

Compute the Retest Tolerance Limit by the following steps:

Determine XRF results for the original and retest XRF readings. Do not correct the original or retest results for substrate bias. In single-family and multi-family housing, a result is defined as a single reading. Therefore, there will be ten original and ten retest XRF results for each house or for the two selected units.

Calculate the average of the original XRF result and the retest XRF result for each testing combination.

Square the average for each testing combination.

Add the ten squared averages together. Call this quantity C.

Multiply the number C by 0.0072. Call this quantity D.

Add the number 0.032 to D. Call this quantity E.

Take the square root of E. Call this quantity F.

Multiply F by 1.645. The result is the Retest Tolerance Limit.

Compute the average of all ten original XRF readings.

Compute the average of all ten re-test XRF readings.

Find the absolute difference of the two averages.

If the difference is less than the Retest Tolerance Limit, the inspection has passed the retest. If the difference of the overall averages equals or exceeds the Retest Tolerance Limit, this procedure should be repeated with ten new testing combinations. If the difference of the overall averages is equal to or greater than the Retest Tolerance Limit a second time, then the inspection should be considered deficient.

Use of this procedure is estimated to produce a spurious result approximately 1% of the time. That is, results of this procedure will call for further examination when no examination is warranted in approximately 1 out of 100 dwelling units tested.

TESTING TIMES:

For the variable-time inspection paint test mode, the instrument continues to read until it has determined whether the result is positive or negative (with respect to the 1.0 mg/cm² Federal standard), with 95% confidence. The following table provides testing time information for this testing mode.

Testing Times Using Variable Reading Time Inspection Mode (Seconds)						
Substrate	All Data			Median for laboratory-measured lead levels (mg/cm ²)		
	25 th Percentile	Median	75 th Percentile	Pb < 0.25	0.25 ≤ Pb < 1.0	1.0 ≤ Pb
Wood, Drywall	2.1	2.3	5.4	2.2	5.4	2.2
Metal	2.6	3.2	5.3	2.7	5.1	5.1
Brick, Concrete, Plaster	3.1	4.0	5.7	3.2	4.0	5.9

CLASSIFICATION OF RESULTS:

When an inconclusive range is specified on the *Performance Characteristic Sheet*, XRF results are classified as positive if they are greater than the upper boundary of the inconclusive range, negative if they are less than the lower boundary of the inconclusive range, or inconclusive if in between. The inconclusive range includes both its upper and lower bounds. If the instrument reads "> x mg/cm²", the value "x" should be used for classification purposes, ignoring the ">". For example, a reading reported as ">1.0 mg/cm²" is classified as 1.0 mg/cm², or inconclusive. When the inconclusive range reported in this PCS is used to classify the readings obtained in the EPA/HUD evaluation, the following False Positive, False Negative and Inconclusive rates are obtained:

- FALSE POSITIVE RATE: 2.5% (2/80)
- FALSE NEGATIVE RATE: 1.9% (4/212)
- INCONCLUSIVE RATE: 16.4% (48/212)

DOCUMENTATION:

A document titled *Methodology for XRF Performance Characteristic Sheets* provides an explanation of the statistical methodology used to construct the data in the sheets, and provides empirical results from using the recommended inconclusive ranges or thresholds for specific XRF instruments. For a copy of this document call the National Lead Information Center Clearinghouse at 1-800-424-LEAD.

This XRF Performance Characteristic Sheet was developed by the Midwest Research Institute (MRI) and QuanTech, Inc., under a contract between MRI and the XRF manufacturer. XRF Performance Characteristic Sheets were originally developed by the MRI under a grant from the U. S. Environmental Protection Agency and the U.S. Department of Housing and Urban Development. HUD has determined that the information provided here is acceptable when used as guidance in conjunction with Chapter 7, Lead-Based Paint Inspection, of HUD's *Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing*.

Appendix 4

Inspector Certification

- No lead based paint was identified in the components tested.

State of California
Division of Occupational Safety and Health
Certified Asbestos Consultant

Michelle E Ehresman

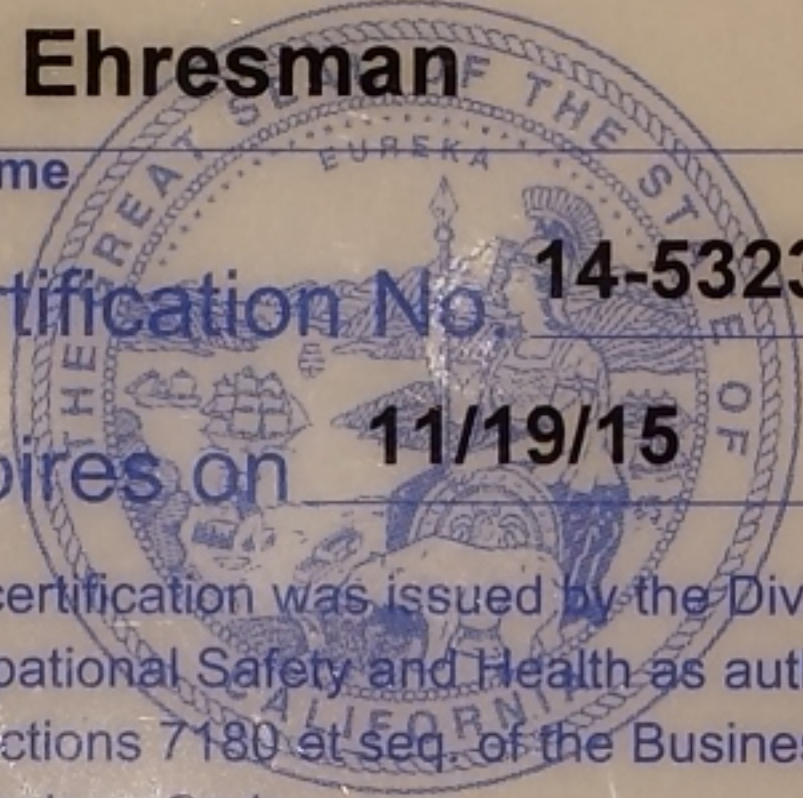


Name

Certification No. **14-5323**

Expires on **11/19/15**

This certification was issued by the Division of Occupational Safety and Health as authorized by Sections 7180 et seq. of the Business and Professions Code.



State of California Department of Public Health
Lead-Related Construction Certificate



Certificate Type

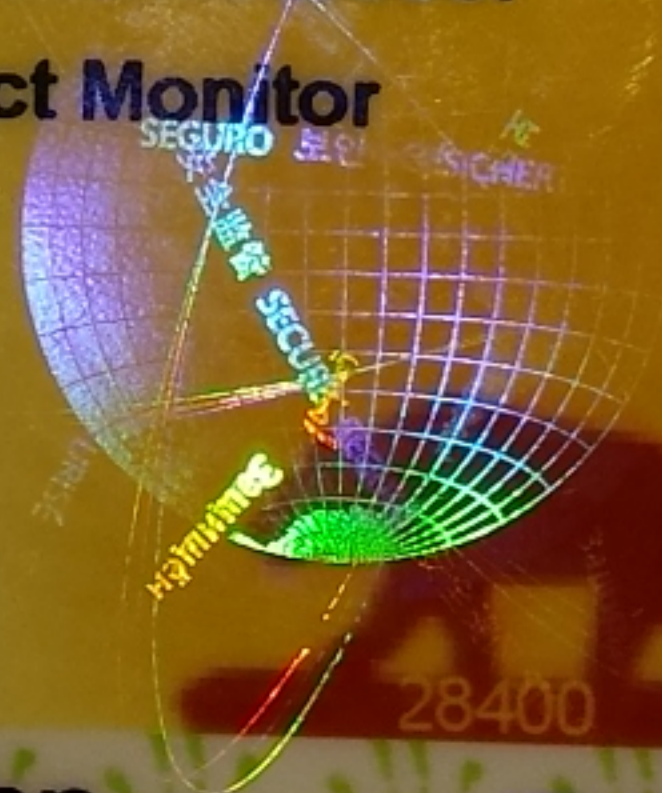
Expiration Date

Inspector/Assessor

05/16/2015

Project Monitor

05/16/2016



Michelle E Ehresman

28400

Appendix 5

Glossary



Glossary

AAAL: 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; postabatement clearance testing; recordkeeping; and, if applicable, monitoring. See also Complete abatement and Interim controls.

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

Accessible surface: Any protruding interior or exterior surface, such as an interior window sill, that a young child can mouth or chew.

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

Accredited laboratory: A laboratory that has been evaluated and approved by the National Lead Laboratory Accreditation Program (NLLAP), to perform lead measurement or analysis, usually over a specified period of time.

Accredited training provider: A training provider who meets the standards established by EPA for the training of risk assessors, inspectors, lead-based paint hazard control contractors, and workers.

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.

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.

AIIHA: 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 alkalies. 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).

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.

Biennial report (for hazardous waste): A report (EPA Form 8700–13A) submitted by generators of hazardous waste to the EPA Regional Administrator. The report is due on March 1 of even-numbered years. The report includes information on the generator's activities during the previous calendar year. The owners and operators of treatment, storage, and disposal facilities must also prepare and submit biennial reports using EPA Form 8700–1313.

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—washability, 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 $\mu\text{g}/\text{dL}$. They are also expressed in micromoles per liter ($\mu\text{mol}/\text{L}$).

Blank: A nonexposed 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 subsample submitted for analysis with a composition and identity known to the submitter but not to the analyst; used to test the analyst's or laboratory's proficiency in conducting measurements. See also Spiked sample.

Blood lead threshold: Any blood lead level greater than or equal to $10 \mu\text{g}/\text{dL}$ as defined by the Centers for Disease Control and Prevention. See also Elevated Blood Lead level (EBL) child.

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, window sills, 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, or abatement work. Risk assessors, inspectors, and abatement contractors should be certified 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.

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.



Characteristics (of hazardous waste): EPA has identified four characteristics of hazardous waste: ignitability, corrosivity, reactivity, and toxicity (as determined by the TCLP test). Any solid waste that exhibits at least one of these characteristics may be classified as hazardous under the Resource Conservation and Recovery Act (RCRA), depending on how the waste is produced and what quantities are generated. See also Toxicity Characteristic Leaching Procedure (TCLP).

Chewable surface: See Chewed surface and Accessible surface.

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 window sill. See also Accessible surface.

CLC: See Corrected Lead Concentration (CLC).

Cleaning: The process of using a HEPA vacuum and wet cleaning agents to remove leaded dust; the process includes the removal of bulk debris from the work area. OSHA prohibits the use of compressed air to clean lead-contaminated dust from a surface.

Clearance examination: Visual examination and collection of environmental samples by an inspector or risk assessor and analysis by an accredited laboratory upon completion of an abatement project, interim control intervention, or maintenance job that disturbs lead-based paint (or paint suspected of being lead-based). The clearance examination is performed to ensure that lead exposure levels do not exceed standards established by the EPA Administrator pursuant to Title IV of the Toxic Substances Control Act, and that any cleaning following such work adequately meets those standards.

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

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 *Federal Register* (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 all residents in a community (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 is not necessarily a risk assessor, inspector, or abatement project supervisor.

Complete abatement: Abatement of all lead-based paint inside and outside a dwelling or building and reduction of any lead-contaminated dust or soil hazards. All of these strategies require preparation; cleanup; waste disposal; postabatement clearance testing; recordkeeping; and, if applicable, reevaluation and on-going monitoring. See also Abatement.

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.

Containment: A process to protect workers and the environment by controlling exposures to the lead-contaminated dust and debris created during abatement. See 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).

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

Deteriorated lead-based paint: Any lead-based 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 x ray intensity without a graphic of the spectrum usually in mg/cm^2 (milligrams of lead per square centimeter of painted surface area). See also XRF analyzer.

Disposal (of hazardous waste): The discharge, deposit, injection, dumping, spilling, leaking, or placement of solid or hazardous 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 hazardous waste is placed on land or in water to remain there after the facility closes.

Door mat: See Walk-off mat.

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 child: See Elevated Blood Lead level (EBL) 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 which, at room temperature, is capable of substantially recovering its size and shape after the force causing its deformation is removed (see ASTM D 907, D-14).

Elevated Blood Lead level (EBL) child: A child who has a blood lead level greater than or equal to $20 \mu\text{g}/\text{dL}$ or a persistent $15 \mu\text{g}/\text{dL}$. See also Blood lead threshold.

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 protection or administrative controls that are implemented at the work site 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.

Epoxy paint: Paint based on an epoxy resin. An epoxy resin is a cross-linking resin the reactivity of which depends on the epoxide group.

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

Examination: See Clearance examination.

Examiner: A person certified to conduct clearance examinations or reevaluations, usually a certified inspector or certified risk assessor.

Exposure monitoring: The sampling and analysis of air both inside and outside the work area to determine the degree of worker and resident exposure to lead or other airborne contaminants, often involving air sampling inside a worker's breathing zone.

Exterior work area: For lead hazard control work, the exterior work area includes any exterior building components, such as a porch or stairway; the safety perimeter; and access barriers.

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.

Fibermat: A semirigid woven material attached with a liquid adhesive to a surface or substrate.

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 *Federal Register (FR)*.

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

Generator: Any person whose act or operation produces hazardous waste identified or listed in 40 CFR Part 261 or whose act causes a hazardous waste to come under regulation (40 CFR 260.10).

Generator identification number: The unique number assigned by EPA to each generator; transporter of hazardous waste; and treatment, storage, or disposal facility.

Hazardous waste: As defined in EPA regulations (40 CFR 261.3), *hazardous waste* is solid waste or a combination of solid wastes that because of its quantity; concentration; or physical, chemical, or infectious characteristics may cause or significantly contribute to increases in mortality, serious and irreversible or incapacitating but reversible illnesses, or pose a substantial present or potential hazard to human health or the environment when improperly treated, stored, transported, or disposed. As defined in the regulations, solid waste is hazardous if it meets one of four conditions: (1) exhibits a characteristic of hazardous waste (40 CFR Sections 261.20 through 262.24); (2) has been listed as hazardous (40 CFR Section 261.31 through 261.33); (3) is a mixture containing a listed hazardous waste combined with a nonhazardous solid waste, unless the mixture is specifically excluded or no longer exhibits any of the characteristics of hazardous waste; and (4) is not excluded from regulation as hazardous waste. For lead-based paint abatement

waste, hazardous waste is waste that contains more than 5 ppm of leachable lead as determined by the TCLP test, or is waste that is corrosive, ignitable, or reactive and not otherwise excluded.

Hazardous Waste Manifest: See Manifest.

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 1,100 °F (some authorities may use a different temperature).

HEPA filter: See High-Efficiency Particulate Air (HEPA) filter.

HEPA/wet wash/HEPA cycle: The cleaning cycle that begins with HEPA vacuuming, followed by a wet wash with a lead-specific cleaning agent, such as trisodium phosphate detergent or another liquid cleaning agent, followed by a final pass with a HEPA vacuum over the surface.

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.

High phosphate detergent: See Trisodium phosphate (TSP) detergent.

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.

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: An individual who has 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 onsite testing, (2) report the findings of such an inspection, (3) collect environmental samples for laboratory analysis, (4) perform clearance testing, and (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 specialized cleaning, repairs, maintenance, painting, temporary containment, and 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. See also Monitoring, Reevaluation, and Abatement.

Interior window sill: 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 EBL case): 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 elevated 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 the lead content by atomic absorption spectroscopy, inductively coupled plasma emission spectroscopy, 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 (see Federal regulations at 40 CFR 258).

Landfill liner: A continuous layer of natural or synthetic materials placed beneath and sometimes around a surface impoundment, landfill, or landfill cell. The layer restricts the downward or lateral escape of hazardous waste, hazardous waste constituents, or leachate (40 CFR Part 258).

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.

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 (5,000 µg/g, 5,000 ppm, or 5,000 mg/kg) as measured by laboratory analysis. (Local definitions may vary.)

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 Administrator under Title IV of the Toxic Substances Control Act). Lead-based paint hazards

include for example, deteriorated lead-based paint, leaded dust levels above applicable standards, and bare leaded soil above applicable standards.

Lead-based paint hazard control: Activities to control and eliminate lead-based paint hazards, including interim controls, abatement, and complete abatement.

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

Lead-based paint abatement worker: See Worker.

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

Lead-contaminated dust: Surface dust in residences that contains an area or mass concentration of lead in excess of the standard established by the EPA Administrator, pursuant to Title IV of the Toxic Substances Control Act. Until the EPA standards are set, the HUD-recommended clearance and risk assessment standards for leaded dust are 100 µg/ft² on floors, 500 µg/ft² on interior window sills, and 800 µg/ft² on window troughs. The recommended standard for lead hazard screens for floors is 50 µg/ft² and for window troughs is 400 µg/ft².

Lead-contaminated soil: Bare soil on residential property that contains lead in excess of the standard established by the EPA Administrator, pursuant to Title IV of the Toxic Substances Control Act. The HUD-recommended standard and interim EPA guidance is 400 µg/g for high-contact play areas and 2,000 µg/g in other bare areas of the yard. Soil contaminated with lead at levels greater than or equal to 5,000 µg/g should be abated by removal or paving.

Lead-free dwelling: A lead-free dwelling contains no lead-based paint and has interior dust and exterior soil lead levels below the applicable HUD and EPA standards.

Lead hazard screen: A means of determining whether residences in good condition should have a full risk assessment. Also called a risk assessment screen.

Lead-poisoned child: A child with a single blood lead level that is greater than or equal to 20 µg/dL or consecutive blood lead levels greater than or equal to 15 µg/dL. Local definitions may vary.

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

Leaded dust: See Lead-contaminated dust.

Leaded zinc: A paint primer made from zinc oxide and lead sulfates.

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

Listed waste: A hazardous waste that has been placed on one of three lists developed by EPA: nonspecific source wastes, specific source wastes, and commercial chemical products. The lists were developed by examining different types of waste and chemical products to determine if they exhibited one of the four characteristics of hazardous waste (toxicity, corrosivity, ignitability, or reactivity), met the statutory definition of hazardous waste, were acutely toxic or acutely hazardous, or were otherwise toxic.

Maintenance: Work intended to maintain adequate living conditions in a dwelling, which has the potential to disturb lead-based paint or paint that is suspected of being lead-based.

Manifest: The shipping document (EPA Form 8700–22 or a comparable form required by the State or locality) used for identifying the quantity, composition, origin, routing, and destination of hazardous waste during its transport

from the point of generation to the point of treatment, storage, or disposal. Also, a shipping document used to keep track of items being transported. All hazardous waste must be accompanied by a manifest. See Hazardous waste.

Mat: See Walk-off 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 (MDL).

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.

Medical removal: The temporary removal of workers from the job because of the occurrence of elevated blood lead levels as defined in the OSHA Lead Exposure in Construction standard (29 CFR 1926.62).

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; 1/1,000 of a gram.

Microgram: See µg.

Mil: 1/1,000 of an inch; used to measure thickness.

Milligram: See mg.

Monitoring: Surveillance to determine (1) that known or suspected lead-based paint is not deteriorating, (2) that lead-based paint hazard controls, such as paint stabilization, enclosure, or encapsulation have not failed, (3) that structural problems do not threaten the integrity of hazard controls or of known or suspected



lead-based paint, and (4) that 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 for the purpose of making the first three determinations listed above. Reevaluations are conducted in accordance with the Standard Reevaluation Schedule (or more frequently, if needed) for the purpose of making all four determinations. Monitoring is not required in properties known to be free of lead-based paint. See also Reevaluation and Standard reevaluation schedule.

Monofil: A State-approved landfill that accepts only construction debris.

Mouthable surface: See Chewed surface.

Multifamily housing: Housing that contains more than one dwelling unit per location.

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 an offsite paint-stripping facility.

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: A chemical reaction that occurs upon exposure to oxygen. Some coatings cure by oxidation; oxygen enters the liquid coating and crosslinks (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 film stabilization: The process of wet scraping, priming, and repainting surfaces coated with deteriorated lead-based paint; paint film stabilization includes cleanup and clearance.

Paint removal: An abatement strategy that entails the removal of lead-based paint from surfaces. For lead hazard control work, this can mean using chemicals, heat guns below 1,100 °F, and certain *contained* abrasive methods. Open flame burning, open abrasive blasting, sandblasting, water blasting, and extensive dry scraping are prohibited paint removal methods. (Methylene chloride paint removers and dry scraping are also not recommended.)

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. 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 microns. See Exposure monitoring.

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.

Pigment Volume Concentration (PVC): Pigment volume as a percentage of the total non-volatile ingredients.

Pilot project: In multifamily housing, the testing of a lead-based paint hazard control strategy on a limited number of dwellings, usually those that are vacant, to determine the feasibility of carrying out such a strategy in the entire multifamily housing development; usually involves paint testing, air sampling, wipe sampling, worksite preparation, and a variety of lead-based paint hazard control treatments.

Plastic: See Polyethylene plastic.

Polyethylene plastic: All references to polyethylene plastic refer to 6-mil plastic sheeting or polyethylene bags (or doubled bags if using 4-mil polyethylene bags), or any other thick plastic material shown to demonstrate at least equivalent performance. Plastic used to contain waste should be capable of completely containing the waste and, after being properly sealed, should 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."

Primary prevention: The process of controlling lead hazards to prevent exposure *before* a child is poisoned. See 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.

PVC: See Pigment Volume Concentration (PVC).

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).

Reevaluation: In lead hazard control work, the combination of a visual assessment and collection of environmental samples performed by a certified risk assessor to determine if a previously implemented lead-based paint hazard control measure is still effective and if the dwelling remains lead-safe.



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.

Reinspection: See Reevaluation.

Removal: See Paint removal.

Renovation: Work that involves construction and/or home or building improvement measures such as window replacement, weatherization, remodeling, and repainting.

Replacement: A strategy of abatement that entails 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.

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

Resident: A person who lives in a 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 onsite investigation of a residential dwelling to discover any lead-based paint hazards. Risk assessments include an investigation of the age, history, management, and maintenance of the dwelling, and the number of children under age 6 and women of child-bearing age who are residents; a visual assessment; limited environmental sampling (i.e., collection of dust wipe samples, soil samples, and deteriorated paint samples); and preparation of a report identifying acceptable abatement and interim control strategies based on specific conditions.

Risk assessment screen: A type of risk assessment performed only in buildings in good condition using fewer samples but more stringent evaluation criteria (standards) to determine lead hazards.

Risk assessor: A certified individual who has completed 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.

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

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. Also a form of incompatibility between types of coatings.

Screen: See Risk assessment screen or 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 through screening and controlling or eliminating the sources of further exposure. See also Primary prevention and Tertiary prevention.

SEL: See Substrate Equivalent Lead (SEL).

Site: 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.

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.

Soil: See Bare soil.

Solid waste: As defined by RCRA, the term *solid waste* means garbage; refuse; sludge from a waste treatment plant, water supply treatment plant, or air pollution control facility; or other discarded materials, including solid, liquid, semisolid, or contained gaseous material resulting from industrial, commercial, mining, and agricultural operations or from community activities. The term does not include solid or dissolved material in domestic sewage or solid or dissolved material in irrigation return flows or industrial discharges (which are point sources subject to permits under the Clean Water Act), nor does the term include special nuclear or byproduct material as defined by the Atomic Energy Act of 1954.

Spectrum analyzer: A type of XRF analyzer that provides the operator with a plot of the energy and intensity, or counts of both K and L 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., leaded dust) to a specific amount of matrix sample (e.g., one dust wipe) for which an independent estimate of the target analyte concentration is available. Spiked samples are used to determine, for example, the effect of the matrix on a method's recovery efficiency. See also 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 have an automatic standard deviation function. See also Mean.

Standard reevaluation schedule (SRS): A schedule that determines the frequency that reevaluations should be performed on a property.

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

Subsample: A representative portion of a sample. A subsample may be either a field sample or a laboratory sample. A subsample is often 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: $\text{Apparent Lead Concentration} - \text{Substrate Equivalent Lead} = \text{Corrected Lead Concentration}$. See also **Apparent Lead Concentration (ALC)**, **Corrected Lead Concentration (CLC)**, and **XRF analyzer**.

Target housing: Any residential unit constructed before 1978, except dwellings that do not contain bedrooms or dwellings that were developed 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. The units selected are likely to have the greatest probability of containing lead-based paint hazards. A targeted sample is usually selected for performing risk assessments in multi-family housing when it is not possible to select a worst-case sample. See also **Worst-case sample** and **Random sample**.

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

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, substrate, and visible color.

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.

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

Transporter: A person who transports hazardous waste, requiring a manifest under 40 CFR Part 260.10, within the United States by air, rail, highway, or water.

Treatment: In residential lead-based paint hazard control work, any method designed to control lead-based paint hazards. Treatment includes interim controls, abatement, and removal. Hazardous waste “treatment” is a method, technique, or process (such as neutralization) that is designed to change the physical, chemical, or biological character or composition of hazardous waste to neutralize it; render it nonhazardous or less hazardous; recover it; make it safer to transport, store, or dispose; or allow for easier recovery, storage, or volume reduction.

Treatment, Storage, and Disposal (TSD) facility: A facility licensed to handle hazardous waste.

Trisodium phosphate (TSP) detergent: A detergent that contains trisodium phosphate.

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**.

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

Urethane-modified alkyd: An alkyd molecule that has been chemically modified by the incorporation of a urethane; a coating, often a varnish, that uses a urethane-modified alkyd resin in the binder.

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

VOC: See Volatile Organic Compound (VOC).

Volatile Organic Compound (VOC): Substances that vaporize or evaporate from a coating during the coating or curing process.

Walk-off mat: A washable, fibrous material (preferably with a rubber or vinyl backing) positioned at main entryways to reduce transport of lead dust and lead soil into a building or residence.

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

Window sill: See Interior window sill.

Window stool: See Interior window sill.

Window trough: For a typical double-hung window, the portion of the exterior window sill between the interior window sill (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 the 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.

Worker: An individual who has completed training in an accredited program to perform lead-based paint hazard control in housing.

Worksite: Any interior or exterior area where lead-based paint hazard control work takes place.

Worksite preparation level: 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, 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 a 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/cm^2) 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 only refers to portable instruments manufactured to analyze paint, and does not refer to laboratory-grade units or portable instruments designed to analyze soil.