



Lead Paint Solutions

EPA Certified to perform Lead Paint Inspections and Risk Assessment

Lead-Based Paint Combination Inspection and Risk Assessment Report Summary Transmittal Letter Job #2013-4-3 103 COJ- Therman

April 3, 2013

Client Name
Client Address

Dear Mr. xxxxx,

Lead Paint Solutions (LPS) is pleased to offer the results of a Lead Paint Inspection and Risk Assessment conducted at 103 West 23rd Street Jacksonville, Florida on April 3, 2013. The homeowner is xxxxx.

Lead Paint Solutions tested the painted components according to the specifications described in the protocols for lead-based paint testing in the *Housing and Urban Development (HUD) Guidelines (Revised 1997) for the inspection of lead based paint-Chapter 7*, and performed the risk assessment according to in the *Housing and Urban Development (HUD) Guidelines (Revised 1997) for the risk assessment of lead based paint-Chapter 5*.

Lead-based paint is defined as paint containing levels of lead equal to or greater than 1.0 mg/cm². The results of this inspection indicate the presence of lead-based paint on building components in this dwelling; see XRF results for locations.

Upon further investigation including visual inspection and environmental sampling **lead hazards were identified**; see part IV for a description of hazards.

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. Contractors, 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.

This report is valid for the day tested and due to the nature of changing or deteriorating conditions, no representation can be made beyond the date of inspection. This report should be kept by the owner and all future owners for the life of the dwelling.

If you have any questions or need further clarification please contact me at (904) 220-5323. Lead Paint Solutions appreciates this opportunity to be of service.

Respectfully Submitted,

Bill Wilson
Senior Consultant, Lead Risk Assessor

Helping Contractors and Homeowners comply with the EPA Lead Paint Laws while protecting the health of children.

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Lead Paint Solutions

EPA Certified to perform Lead Paint Inspections and Risk Assessments

Combination Lead Paint Inspection And Risk Assessment Report

Job # 2013-4-3 103 COJ- Therman

April 3, 2013

103 West 23rd Street
Jacksonville, Florida, 32206

Prepared for:
Housing and Neighborhood Department

Lead Paint Solutions

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Part I: Identifying Information (information page)**Lead-Based Paint Inspection and Risk Assessment Report****Information Page****Job # 2013-4-3 103 COJ- Therman****Inspection Date: April 3, 2013****Property Address: 103 West 23rd Street****Jacksonville, Florida 32206****Dwelling Built 1920**

Prepared for: xxxxxxxx	Prepared By: Lead Paint Solutions, LLC Certification # FL-48641-1 4460 Hodges Blvd. Box 516 Jacksonville, FL 32224 (904) 220-5323
Property Owner: xxxxxxxx	Inspected by: Lead Risk Assessor Bill Wilson EPA Certification # FL-R-72967-1 Expiration Date: August 31, 2013

XRF Instrument Specifications

Instrument Manufacturer:	Radiation Monitoring Devices, Inc. (RMD)
Model:	LPA-1B
Serial Number:	3376
Modes of Operation:	Time Corrected Mode for Calibrations and Quick Mode for Inspection
Radioactive Source:	Cobalt 57
Age of Radioactive Source:	Assayed March 13, 2013

Laboratory Information:

Schneider Laboratories - 2512 W. Cary Street Richmond, Virginia 23220 - (804)-353-6778

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Part II: Summary/Documents

1. General Information

This is a report of a visual survey; an X-Ray Fluorescence (XRF) analysis; and environmental sampling of the readily accessible areas of the dwelling. The presence or absence of lead-based paint or lead-based paint hazards applies only to the tested or assessed surfaces on the date of the field visit and it should be understood that conditions may change due to deterioration or maintenance. The results and material conditions noted within this report were accurate at the time of the inspection and in no way reflect the conditions at the property after the date of the inspection. Ongoing monitoring by the owner is usually necessary. No other environmental concerns were addressed during this inspection.

The Survey of the painted components of the dwelling was performed using a RMD LPA-1 Spectrum Analyzer. The data collected is in the section titled XRF Results. Typically wall "A" in each room is the wall where the front entrance door opening is located (or aligned with street). Going clockwise and facing Wall "A", Wall "B" will always be to your right, Wall "C" directly to the rear and Wall "D" to the left. Doors, windows and closets are designated as left, center or right depending on their location on the wall. The calibration of the RMD LPA-1 is done in accordance with the Performance Characteristic Sheet (PCS) for this instrument. These XRF instruments are calibrated using the calibration standard block of known 1.0 mg/cm² lead content. Three calibration readings are taken before and after each dwelling is tested to insure manufacturer's standards are met. If for any reason the instrument is not maintaining a consistent calibration reading within the manufacturer's standards for performance on the calibration block supplied by the manufacturer, manufacturer's recommendations are used to bring the instrument into calibration. If the instrument cannot be brought back into calibration it is taken off the site and sent back to the manufacturer for repair and/or re-calibration.

Components were tested if coated (painted, stained, shellacked or varnished). Uncoated extruded or anodized metal, stone, glass, plastic, ceramic or uncoated components are not included in Lead-Based Paint inspections. If a specific coated building component is not addressed in this report contact Lead Paint Solutions for additional testing before the coating on the building component is disturbed or assume it is coated with LBP. In addition, a surface-by-surface visual inspection of all painted surfaces was performed in conjunction with the XRF testing to determine which lead-based painted surfaces are deteriorated.

Often previous renovations will enclose lead-based paint. Previous renovations such as installed paneling, vinyl siding or other secondary coverings may conceal painted components which were not accessible during this investigation. If during renovation painted surfaces are uncovered contact Lead Paint Solutions for additional testing or assume the uncovered existing paint is lead-based paint and employ lead safe construction practices.

Lead-based paint is defined as paint containing levels of lead equal to or greater than 1.0 mg/cm².

The summary should not be used in lieu of the complete report. It is essential that all portions of this report be read and carefully considered, rather than limiting conclusions to the summary.

Some painted surfaces may contain levels of lead below 1.0 mg/cm², which could create lead dust or lead-contaminated soil hazards if the paint is turned into dust by abrasion, scraping, or sanding. Levels of lead-based paint below 1.0 mg/cm² are also a concern for employees working under the jurisdiction and authority of the OSHA standards, 29 CFR 1926.62.

This Combined Lead-Based Paint Inspection and Risk Assessment were performed in compliance with Federal regulations: 24 CFR Subtitle A, Subpart J Rehabilitation, Section C, which stipulates Lead Risk Assessments for certain Properties that are part of a federally funded loan program.

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Disclosure Rule: The Federal Residential Lead-Based Paint Hazard Reduction Act of 1992, 42 U.S.C. 4852d, requires sellers and landlords of most residential housing built before 1978 to disclose all available records or reports concerning lead-based paint hazards, including the test reports contained in this notice, to purchasers and tenants at the time of sale or lease or lease renewal. This disclosure must occur even if hazard reduction or abatement has been completed. Failure to disclose these test results is a violation of the U.S. Department of Housing and Urban Development and the U.S. Environmental Protection Agency regulations at 24 CFR Part 35 and 40 CFR Part 745 and can result in a fine of up to \$11,000 per violation. To find out more information about your obligations under Federal lead-based paint requirements, call 1-800-424-LEAD.

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2. Results Summary

Bill Wilson a certified Risk Assessor (FL-R-72967-1) employed by Lead Paint Solutions conducted a combination lead-based paint inspection and risk assessment at 103 West 23rd Street Jacksonville, Florida 32206.

Number of XRF test taken with calibration: 83

Number of dust wipe taken: 4

Number of soil samples taken: 1

Family demographics: xxxxxx lives alone with no children visiting regularly.

Building Condition: Dwelling is in poor condition by HUD standards.

This investigation was conducted in anticipation of a construction rehabilitation effort that may utilize federal funds. This report documents technical data generated by a portable XRF paint analyzer, laboratory analysis of dust wipes/soil samples, a visual inspection of the property, and findings of interviews and supplemental research.

Lead Paint Solutions tested the painted components according to the specifications described in the protocols for lead-based paint testing in the *Housing and Urban Development (HUD) Guidelines (Revised 1997) for the inspection of lead based paint-Chapter 7*, and performed the risk assessment according to in the *Housing and Urban Development (HUD) Guidelines (Revised 1997) for the risk assessment of lead based paint-Chapter 5*.

Lead-based paint is defined as paint containing levels of lead equal to or greater than 1.0 mg/cm². The results of this inspection indicate the presence of lead-based paint on building components in this dwelling; see XRF results for locations.

Intact lead-based paint is not a hazard. Deteriorating lead-based paint is a hazard. Upon further investigation including visual inspection and environmental sampling **lead hazards were identified**; see part IV for a description of hazards.

Hazard Control: Abatement and/or Interim Control options are recommended in part IV of this report. The option or the combination of options chosen should depend on cost effectiveness. All abatement or interim control work must employ "Lead Safe Work Practices".

The residence may be scheduled for renovation under government rehabilitation program. The project manager is responsible for determining which lead hazard control options will be used to control identified and potential lead hazards. The Project manager must share the results of this report with the owners of the property and those who occupy the property and provide the occupants with the EPA brochure "Renovate Right" as a way of educating the residents to lead paint hazards.

Clearance examination is required upon construction completion and final clean.

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Part III: Results & Analysis of On-site Evaluation, Environmental Sampling and Visual Assessment

1. Building Information

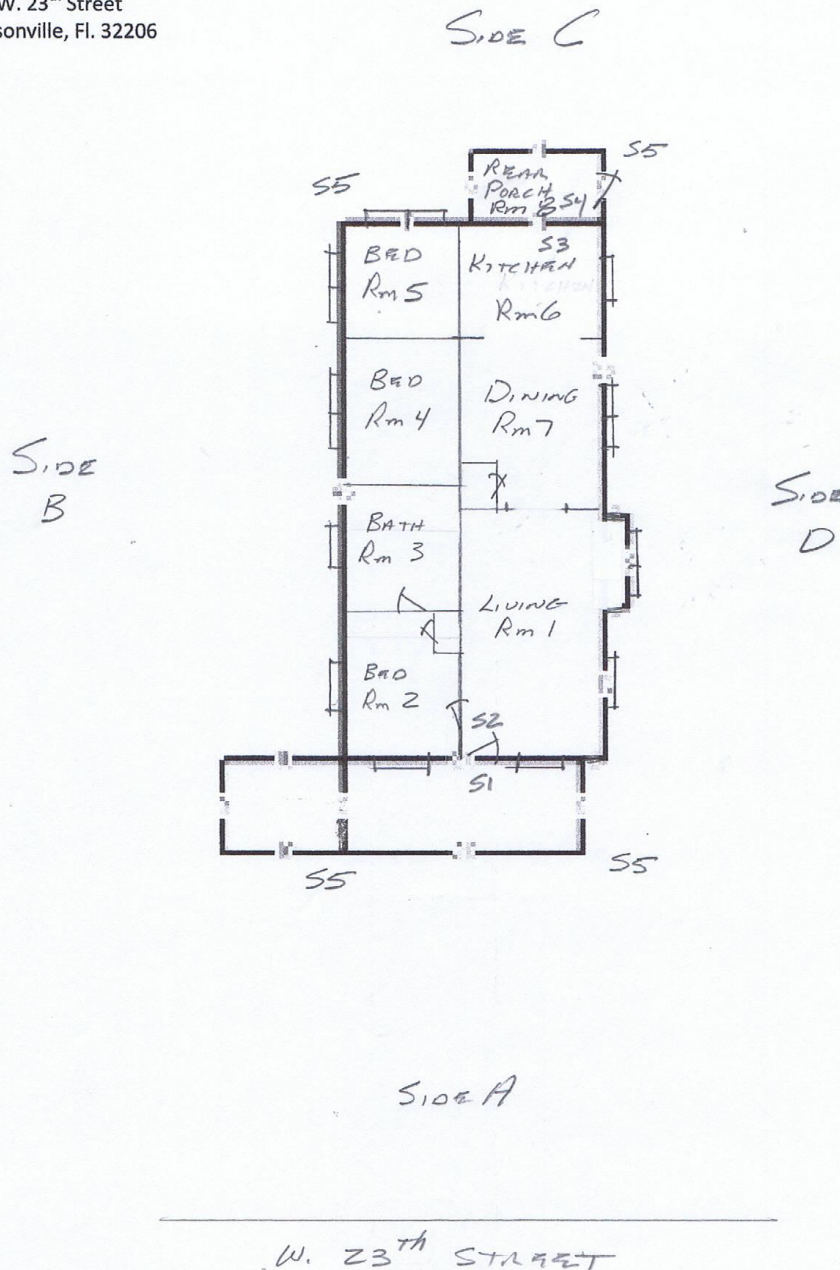
Building 1 Site Address 103 W 23RD ST Jacksonville FL 32206				Element	Code	Detail
Building Type 0101 - SFR 1 STORY SOH Year Built 1920 Building Value \$32,215.00				Exterior Wall	7	7 CemFiberShingle
				Roofing Structure	3	3 Gable or Hip
				Roofing Cover	3	3 Asph/Comp Shingle
				Interior Wall	3	3 Plastered
				Int Flooring	9	9 Pine / Soft Woods
				Heating Fuel	4	4 Electric
				Heating Type	4	4 Forced-Ducted
				Air Conditioning	3	3 Central
Type	Gross Area	Heated Area	Effective Area	Element	Code	
Fin Screened Porch	66	0	23	Stories	1.000	
Base Area	1012	1012	1012	Bedrooms	2.000	
Finished Open Porch	160	0	48	Baths	1.000	
Finished Carport	80	0	20	Rooms / Units	1.000	
Finished Open Porch	16	0	5			
Total	1334	1012	1104			

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2. Building Sketch (floor and site plan):

103 W. 23th Street
Jacksonville, FL 32206



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3. XRF Results

SEQUENTIAL REPORT OF LEAD PAINT INSPECTION FOR:

Inspection Date: 04/03/13
Report Date: 4/3/2013
Abatement Level: 1.0
Report No. 04/03/13 09:40
Total Readings: 84
Job Started: 04/03/13 09:40
Job Finished: 04/03/13 10:47

Read No.	Room Rm	Room Name	Wall	Structure	Location	Member	Paint Cond	Substrate	Paint Color	Lead (mg/cm ²)	Mode
1		CALIBRATION								1.0	TC
2		CALIBRATION								0.9	TC
3		CALIBRATION								0.9	TC
4	001	living room	A	Wall	Ctr		I	plaster	white	-0.3	QM
5	001	living room	B	Wall	Ctr		I	plaster	white	-0.2	QM
6	001	living room	C	Wall	Ctr		I	plaster	white	0.2	QM
7	001	living room	D	Wall	Ctr		I	plaster	white	-0.2	QM
8	001	living room	D	Ceiling	Ctr		I	plaster	white	-0.3	QM
9	001	living room	A	Window	Ctr	Rgt casing	I	wood	white	2.5	QM
10	001	living room	A	Door	Ctr	Lft casing	I	wood	white	-0.1	QM
11	001	living room	B	Door	Ctr	door	I	wood	white	2.1	QM
12	001	living room	B	Door	Ctr	Rgt casing	I	wood	white	2.2	QM
13	001	living room	B	Baseboard	Ctr		I	wood	white	2.8	QM
14	001	living room	D	Mantle	Ctr		I	wood	white	2.4	QM
15	002	bedroom	A	Wall	Ctr		I	wood	white	0.0	QM
16	002	bedroom	B	Wall	Ctr		I	wood	white	-0.1	QM
17	002	bedroom	C	Wall	Ctr		I	wood	white	0.2	QM
18	002	bedroom	D	Wall	Ctr		I	wood	white	-0.1	QM
19	002	bedroom	D	Ceiling	Ctr		I	plaster	white	0.0	QM
20	002	bedroom	B	Window	Ctr	Rgt casing	I	wood	white	2.0	QM
21	002	bedroom	C	Baseboard	Ctr		I	wood	white	2.2	QM
22	002	bedroom	C	Door	Ctr	door	I	wood	white	1.8	QM
23	002	bedroom	C	Door	Ctr	Lft jamb	I	wood	white	2.4	QM
24	003	bathroom	A	Wall	Ctr		I	drywall	white	-0.2	QM
25	003	bathroom	B	Wall	Ctr		I	drywall	white	-0.3	QM
26	003	bathroom	C	Wall	Ctr		I	drywall	white	0.3	QM
27	003	bathroom	D	Wall	Ctr		I	drywall	white	-0.3	QM
28	003	bathroom	D	Ceiling	Ctr		I	drywall	white	-0.1	QM
29	003	bathroom	D	Door	Ctr	door	I	wood	white	-0.1	QM
30	003	bathroom	D	Door	Ctr	Rgt casing	I	wood	white	0.2	QM
31	004	bedroom	A	Wall	Ctr		I	drywall	white	-0.3	QM
32	004	bedroom	B	Wall	Ctr		I	plaster	white	-0.1	QM
33	004	bedroom	C	Wall	Ctr		I	plaster	white	-0.3	QM
34	004	bedroom	D	Wall	Ctr		I	plaster	white	0.0	QM
35	004	bedroom	D	Ceiling	Ctr		I	plaster	white	0.0	QM
36	004	bedroom	D	Baseboard	Ctr		I	wood	white	2.4	QM
37	004	bedroom	D	Door	Ctr	Header	I	wood	white	1.6	QM
38	004	bedroom	D	Door	Ctr	Rgt casing	I	wood	white	1.8	QM
39	004	bedroom	B	Window	Ctr	Rgt casing	I	wood	white	1.8	QM
40	005	bedroom	A	Wall	Ctr		I	drywall	white	0.4	QM
41	005	bedroom	B	Wall	Ctr		I	plaster	white	-0.1	QM
42	005	bedroom	C	Wall	Ctr		I	drywall	white	-0.1	QM
43	005	bedroom	D	Wall	Ctr		I	drywall	white	0.3	QM
44	005	bedroom	D	Ceiling	Ctr		I	drywall	white	0.3	QM
45	005	bedroom	A	Baseboard	Ctr		I	wood	white	2.0	QM
46	005	bedroom	A	Door	Ctr	door	I	wood	white	2.4	QM

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47	005 bedroom	A	Door	Ctr Rgt casing	I wood	white	2.3	QM
48	005 bedroom	B	Window	Ctr Rgt casing	I wood	white	2.8	QM
49	006 kitchen	A	Wall	Ctr	I plaster	white	0.6	QM
50	006 kitchen	B	Wall	Ctr	I plaster	white	0.5	QM
51	006 kitchen	C	Wall	Ctr	I plaster	white	0.4	QM
52	006 kitchen	D	Wall	Ctr	I plaster	white	0.5	QM
53	006 kitchen	D	Ceiling	Ctr	I plaster	white	0.4	QM
54	006 kitchen	B	Baseboard	Ctr	I wood	white	2.0	QM
55	006 kitchen	C	Door	Ctr Rgt jamb	I wood	white	2.3	QM
56	007 dining room	A	Wall	Ctr	I plaster	white	-0.2	QM
57	007 dining room	B	Wall	Ctr	I plaster	white	-0.4	QM
58	007 dining room	C	Wall	Ctr	I plaster	white	-0.1	QM
59	007 dining room	D	Wall	Ctr	I plaster	white	0.1	QM
60	007 dining room	D	Ceiling	Ctr	I plaster	white	-0.2	QM
61	007 dining room	A	Baseboard	Ctr	I wood	white	2.3	QM
62	007 dining room	A	Door	Ctr Lft casing	I wood	white	2.6	QM
63	001 Ext Hous	A	Wall	Ctr	I concrete	white	-0.5	QM
64	001 Ext Hous	A	Ceiling	Ctr	P wood	white	9.9	QM
65	001 Ext Hous	A	Window	Lft Rgt casing	P wood	green	9.9	QM
66	001 Ext Hous	A	Door	Ctr Rgt casing	P wood	green	4.0	QM
67	001 Ext Hous	A	Beam	Ctr	P wood	white	9.3	QM
68	001 Ext Hous	A	Column	Ctr	P wood	white	-0.2	QM
69	001 Ext Hous	A	Floor	Ctr	P concrete	green	0.1	QM
70	001 Ext Hous	B	Wall	Ctr	I concrete	white	-0.3	QM
71	001 Ext Hous	B	Window	Ctr Rgt casing	I concrete	white	6.0	QM
72	001 Ext Hous	C	Wall	Ctr	I concrete	white	-0.4	QM
73	001 Ext Hous	C	Window	Ctr Rgt casing	P wood	green	2.3	QM
74	001 Ext Hous	C	Soffit	Ctr	P wood	white	7.4	QM
75	001 Ext Hous	C	Rafter tail	Ctr	P wood	white	8.4	QM
76	008 rear porch	A	Wall	Ctr	P wood	white	4.8	QM
77	008 rear porch	B	Wall	Ctr	P wood	gray	4.5	QM
78	008 rear porch	C	Wall	Ctr	P wood	gray	6.1	QM
79	008 rear porch	D	Wall	Ctr	P wood	gray	8.2	QM
80	008 rear porch	D	Ceiling	Ctr	P wood	gray	5.7	QM
81	008 rear porch	D	Floor	Ctr	P wood	gray	0.0	QM
82	CALIBRATION						1.0	TC
83	CALIBRATION						0.9	TC
84	CALIBRATION						0.9	TC

----- End of Readings -----

SUMMARY REPORT OF LEAD PAINT INSPECTION FOR:

Inspection Date: 04/03/13
 Report Date: 4/3/2013
 Abatement Level: 1.0
 Report No. 04/03/13 09:40
 Total Readings: 84 Actionable: 34
 Job Started: 04/03/13 09:40
 Job Finished: 04/03/13 10:47

Read No.	Wall	Structure	Location	Member	Paint Cond	Substrate	Paint Color	Lead (mg/cm ²)	Mode
Exterior Room 001 Ext Hous									
067	A	Beam	Ctr		P	wood	white	9.3	QM
064	A	Ceiling	Ctr		P	wood	white	9.9	QM
065	A	Window	Lft	Rgt casing	P	wood	green	9.9	QM

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066	A	Door	Ctr	Rgt casing	P	wood	green	4.0	QM
071	B	Window	Ctr	Rgt casing	I	concrete	white	6.0	QM
075	C	Rafter tail	Ctr		P	wood	white	8.4	QM
074	C	Soffit	Ctr		P	wood	white	7.4	QM
073	C	Window	Ctr	Rgt casing	P	wood	green	2.3	QM

 Interior Room 001 living room

009	A	Window	Ctr	Rgt casing	I	wood	white	2.5	QM
013	B	Baseboard	Ctr		I	wood	white	2.8	QM
011	B	Door	Ctr	door	I	wood	white	2.1	QM
012	B	Door	Ctr	Rgt casing	I	wood	white	2.2	QM
014	D	Mantle	Ctr		I	wood	white	2.4	QM

 Interior Room 002 bedroom

020	B	Window	Ctr	Rgt casing	I	wood	white	2.0	QM
021	C	Baseboard	Ctr		I	wood	white	2.2	QM
022	C	Door	Ctr	door	I	wood	white	1.8	QM
023	C	Door	Ctr	Lft jamb	I	wood	white	2.4	QM

 Interior Room 004 bedroom

039	B	Window	Ctr	Rgt casing	I	wood	white	1.8	QM
036	D	Baseboard	Ctr		I	wood	white	2.4	QM
037	D	Door	Ctr	Header	I	wood	white	1.6	QM
038	D	Door	Ctr	Rgt casing	I	wood	white	1.8	QM

 Interior Room 005 bedroom

045	A	Baseboard	Ctr		I	wood	white	2.0	QM
046	A	Door	Ctr	door	I	wood	white	2.4	QM
047	A	Door	Ctr	Rgt casing	I	wood	white	2.3	QM
048	B	Window	Ctr	Rgt casing	I	wood	white	2.8	QM

 Interior Room 006 kitchen

054	B	Baseboard	Ctr		I	wood	white	2.0	QM
055	C	Door	Ctr	Rgt jamb	I	wood	white	2.3	QM

 Interior Room 007 dining room

061	A	Baseboard	Ctr		I	wood	white	2.3	QM
062	A	Door	Ctr	Lft casing	I	wood	white	2.6	QM

 Interior Room 008 rear porch

076	A	Wall	Ctr		P	wood	white	4.8	QM
077	B	Wall	Ctr		P	wood	gray	4.5	QM
078	C	Wall	Ctr		P	wood	gray	6.1	QM
079	D	Wall	Ctr		P	wood	gray	8.2	QM
080	D	Ceiling	Ctr		P	wood	gray	5.7	QM

 Calibration Readings

----- End of Readings -----

Refer to the building sketch for room designations.

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4. Resident Questionnaire (Form 5.0)

Chapter 5: Risk Assessment

103 W. 23rd Street
Jacksonville, FL 32206
2013-4-3 103 COJ

LIVES ALONE w/NO CHILDREN

Form 5.0
Resident Questionnaire
(To be completed by risk assessor via interview with resident.)

Children/Children's Habits

1. (a) Do you have any children that live in your home? Yes _____ No X
(If no children, skip to Question 5.)
(b) If yes, how many? _____ Ages? _____
(c) Record blood lead levels, if known. _____
(d) Are there women of child-bearing age present? Yes _____ No _____

2. Location of the rooms/areas where each child sleeps, eats, and plays.

Name of child	Location of bedroom	Location of all rooms where child eats	Primary location where child plays indoors	Primary location where child plays outdoors

3. Where are toys stored/kept? _____
4. Is there any visible evidence of chewed or peeling paint on the woodwork, furniture, or toys?
Yes _____ No _____

Family Use Patterns

5. Which entrances are used most frequently? *SIDE A FRONT DOOR*
6. Which windows are opened most frequently? *ALL*
7. Do you use window air conditioners? If yes, where? *NAS CENTRAL*
(Condensation often causes paint deterioration)
8. (a) Do any household members garden? Yes _____ No X
(b) Location of garden. _____
(c) Are you planning any landscaping activities that will remove grass or ground covering? Yes _____ No _____
9. (a) How often is the household cleaned? *DAILY*
(b) What cleaning methods do you use? *VAC + WIPR*
10. (a) Did you recently complete any building renovations? Yes _____ No X
(b) If yes, where? _____
(c) Was building debris stored in the yard? If yes, where? _____
11. Are you planning any building renovations? If yes, where? *YES per COJ*
12. (a) Do any household members work in a lead-related industry? Yes _____ No ✓
(b) If yes, where are dirty work clothes placed and cleaned? _____

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5. Maintenance/Paint Condition Form (Form 5.2)

Not used – typically multifamily

6. Building Condition Form (Form 5.1)

Chapter 5: Risk Assessment

103 W. 23th Street
Jacksonville, FL 32206
2013-4-3 103 COJ

Form 5.1
Building Condition Form

Condition	Yes	No
Roof missing parts of surfaces (tiles, boards, shakes, etc.)		
Roof has holes or large cracks		
Gutters or downspouts broken		
Chimney masonry cracked, bricks loose or missing, obviously out of plumb	X	
Exterior or interior walls have obvious large cracks or holes, requiring more than routine pointing (if masonry) or painting	X	
Exterior siding has missing boards or shingles	X	
Water stains on interior walls or ceilings		
Plaster walls or ceilings deteriorated	X	
Two or more windows or doors broken, missing, or boarded up		
Porch or steps have major elements broken, missing, or boarded up		
Foundation has major cracks, missing material, structure leans, or visibly unsound		
* Total number		

* If the "Yes" column has two or more checks, the dwelling is usually considered to be in poor condition for the purposes of a risk assessment. However, specific conditions and extenuating circumstances should be considered before determining the final condition of the dwelling and the appropriateness of a lead hazard screen.

Notes: *Dwelling is in poor condition*

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7. Deteriorated Paint Sampling Results (Form 5.3)

No paint samples were taken, XRF Analyzer was used on site.

8. Dust Sampling Results Form 5.4

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INCORPORATED
2512 W. Cary Street • Richmond, Virginia • 23220-5117
804-353-6778 • 800-785-LABS (5227) • (FAX) 804-359-1475
Over 25 Years of Excellence in Service and Technology
AIHA/ELLAP 100527, ISO/IEC 17025, NVLAP 101150-0, NYELAP 11413, VELAP/NELAC 460135
LABORATORY ANALYSIS REPORT

Lead Analysis based on EPA 7000B Method
Using Preparation Method EPA 3050B

ACCOUNT #:	4152-13-338	DATE RECEIVED:	4/13/2013
CLIENT:	Lead Paint Solutions	DATE ANALYZED:	4/15/2013
ADDRESS:	103 Century 21 Drive Ste 108 Jacksonville, FL 32246	DATE REPORTED:	4/15/2013
PROJECT NAME:	[REDACTED]		
JOB LOCATION:	103 W 23th Street		
PROJECT NO.:	Jacksonville FL32206		
PO NO.:	2013-4-3 103 COJ TH	Sample Type:	WIPE

SLI Sample No.	Client Sample No.	Collection Date	Sample Description	Sample Area (ft²)	Total Lead (µg)	Lead Conc (µg/ft²)
31849791	S1	4/3/2013	10:00 AM Front Porch FL	1.00	29.2	29.2
31849792	S2	4/3/2013	10:00 AM Rm 1 Living FL	1.00	< 10.0	< 10.0
31849793	S3	4/3/2013	10:00 AM Rm 6 Kitchen FL	1.00	< 10.0	< 10.0
31849794	S4	4/3/2013	10:00 AM Rm 8 Rear Porch FL	1.00	2,370.4	2,370.4

Analysis Run ID: 51534

Analyst: Sultan Al-Johani

Total Number of Pages in Report: 1

Results relate only to samples as received by the laboratory.

Final concentration calculations are based on client supplied information.

Reviewed By


Greg Brown, National Sales Manager

Visit www.slabinc.com for current certifications.

*Minimum Reporting Limit: 10.0 µg. EPA Lead Hazard Std: 40 µg/ft² floors (please check lead wipe EPA HUD limit in your state) and 250 µg/ft² interior window sills, based on weighted avg of all samples taken. EPA Clearance Std: 40 µg/ft² floors, 250 µg/ft² interior window sills, 400 µg/ft² window troughs. MDLs and resulting reporting limits are based on ASTM E 1792 compliant media. *Data precision justifies 2 sig figures. All internal QC parameters were met. Unusual sample conditions, if any, are described.*

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9. Soil Sampling Results (Form 5.5)

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ACCOUNT #: 4152-13-342				DATE RECEIVED: 4/13/2013			
CLIENT: Lead Paint Solutions				DATE ANALYZED: 4/16/2013			
ADDRESS: 103 Century 21 Drive Ste 108 Jacksonville, FL 32246				DATE REPORTED: 4/16/2013			
PROJECT NAME: [REDACTED]							
JOB LOCATION: 103 W 23th Street							
PROJECT NO.: 2013-4-3 103 COJ TH							
PO NO.:				Sample Type: SOIL			
SLI Sample No.	Client Sample No.	Collection Date	Sample Description	Sample Wt (mg)	Total Lead (µg)	Lead Conc (% by wt)	Lead Conc PPM
31849817	S5	4/3/2013 10:00 AM	Soil	505	159.5	0.032	316
Analysis Run ID: 51539							
Analyst: MARTI H. BAIRD				Abisola O. Kasali			
Total Number of Pages in Report: 1				Reviewed By Abisola O. Kasali, Metals Supervisor			
Results relate only to samples as received by the laboratory.				Visit www.slabinc.com for current certifications.			
<small>Minimum Reporting Limit: 10.0 µg. EPA Soil Std for bare residential soil: 400 ppm by wt in play areas; 1200 ppm by wt in bare soil in the remainder of the yard based on an avg of all other samples collected. EPA does not distinguish between lead-contaminated soil and soil-lead hazards. Soil samples are tested as received unless noted as "Dried before analysis." "Data precision justifies 2 sig. figures. All internal QC parameters were met. Unusual sample conditions, if any, are described.</small>							

10. Other Sampling Results - No other samples were collected.

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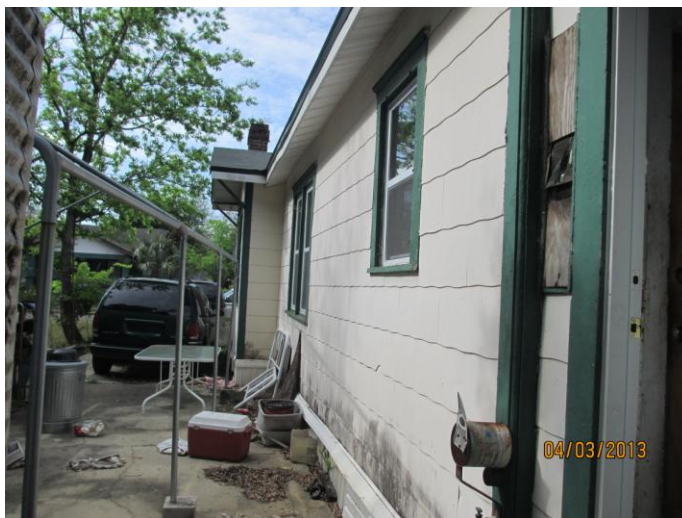
BillWilson@LeadPaintSolutions.com -- Ofc (904) 220-5323
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11. Owners Authorization
Place here

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12. Photography (if any)



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13. LPS and Risk Assessor Credentials

Individual and Firm EPA License/Certification

Lead Paint Activities Firm

Lead Paint Solutions LLC

EPA Certification FL-48641-1



Lead Risk Assessor

William (Bill) R. Wilson

EPA Certification # FL-R-72967-1



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Part IV: Lead Hazard Control Plan

1. List of Hazards

The risk assessment identified the following lead hazards:

Hazard 1 – Exterior of dwelling – The exterior original wood including front porch ceiling, fascia, beams, soffit, and windows trim contain deteriorated lead-based paint. A percentage of the dwelling's original exterior wood has been covered with vinyl which encloses lead based paint; however not all exterior wood containing LBP has been enclosed and is considered a hazard.

Hazard 2- Room 8 rear porch was originally an exterior room and contains deteriorated LBP.

Hazard 3- Room 8 rear porch was originally an exterior room and contains extremely high concentration of lead dust.

Hazard 4 – Exterior Soil contains visible paint chips which are considered a hazard by the EPA.

2. Recommendations of interim controls (less than \$25,000 federal funding) including estimated cost.

Hazard 1 – Exterior of dwelling – The exterior original wood including front porch ceiling, fascia, beams, soffit, and windows trim contain deteriorated lead-based paint. A percentage of the dwelling's original exterior wood has been covered with vinyl which encloses lead based paint; however not all exterior wood containing LBP has been enclosed and is considered a hazard. Perform paint film stabilization per chapter 11 of the HUD guidelines for the components listed and any deteriorated paint (deteriorated paint must be wet scraped prior to repainting or encapsulation). Loose paint must be wet scraped, employing lead safe construction practices by workers that completed class room training in an approved curriculum in lead safe work practices and have their certification posted on site as the work is performed. Install a peel seal product per manufactures recommendation.

Note: Installation of the primer and top coat of paint can be installed without using lead safe work practice if further paint scraping is not necessary. At the Designed Party's project manager's option vinyl siding enclosure may be installed in lieu of the primer and finish coat of paint; this vinyl siding option would meet the abatement requirement if federal project funding exceeded \$25,000.

Hazard 2- Room 8 rear porch was originally an exterior room and contains deteriorated LBP. Perform paint film stabilization per chapter 11 of the HUD guidelines for the components listed and any deteriorated paint (deteriorated paint must be wet scraped prior to repainting or encapsulation). Loose paint must be wet scraped, employing lead safe construction practices by workers that completed class room training in an approved curriculum in lead safe work practices and have their certification posted on site as the work is performed.

Hazard 3- Room 8 rear porch was originally an exterior room and contains extremely high concentration of lead dust. Perform dust removal – HEPA vacuum all areas followed by wet washing and wiping.

Hazard 4 – Exterior Soil contains visible paint chips which are considered a hazard by the EPA. HEPA vacuuming soil surface around the perimeter drip-line of the dwelling in the vicinity of identified lead-based paint, to remove visible paint chips, followed by installing landscape fabric and cover with at least 2 inches of wood mulch or sod a minimum 3 feet from dwelling wall

General recommendation is to perform interim repairs on any deteriorated paint on any building components in the dwelling.

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All lead safe construction practices to be performed by workers that completed class room training in an approved curriculum in lead safe work practices and have their certification posted on site as the work is performed. Note that an RRP certified renovator can not train workers to perform work on a HUD/Federally funded project.

All work to be performed per HUD Guidelines including but not exclusively the following:

- *Cleaning to be performed in accordance with Chapter 14 of the HUD Guidelines.
- *Resident Protection and Worksite Preparation in accordance with Chapter 8 of the HUD Guidelines.
- *Clearance to be performed per chapter 15 HUD Guidelines.
- *Interim Controls to be performed in accordance with Chapter 11 of the HUD guidelines
- *All applicable OSHA Rules

Suggested best practice is to perform the lead hazard abatement work and have clearance before the general construction begins. Note: Clearance after construction would require a larger work containment area and subsequently additional cleaning and clearance.

In efforts of delivering a cost effective and lead safe project, contractors are suggested to contact Bill Wilson at 904-220-5323 with any questions or to discuss the project sequencing strategy such as owner occupancy plan, containment barriers plan, and scheduling project clearance.

A Clearance Examination is required upon completion of renovation and final clean. After all renovation activities have been completed and clearance established a certificate of Lead-Based Paint Compliance may be appended to this report.

- *Please note that both EPA and HUD require occupant protection plans for all disturbances of lead-based paint in excess of de-minimums levels until clearance is achieved.*
- *Contractors are responsible for compliance with all applicable building codes.*
- *Refer to the joint EPA/HUD letter dated April 19, 2001 clarifying “interim controls” and “abatement”.*
- *These estimated costs do not include the cost of clearance testing or contractor mobilization.*

The costs shown below include labor, materials, worker protection, site containment and cleanup. These are only rough estimates; a precise estimate should be obtained from a certified lead-based paint abatement contractor. Only certified lead-based paint abatement contractors may perform abatement activities.

Hazard – Interior Window Sills

Dust removal – HEPA vacuum all identified windowsills followed by wet washing and wiping. Perform a final liquid wax or paint. HEPA vacuum floors in the vicinity of windowsills. Hard surface floors should be wet mopped.	\$25/sill
Note: Lead dust detected in windowsills that have no lead paint may be from old imported plastic mini-blinds. Old plastic mini-blinds should be discarded as lead debris if lead dust is detected in windows with old plastic mini-blinds.	

Hazard – Exterior Wood Trim and Wall Siding

Paint film stabilization for the components listed, includes wet scraping and repainting – Deteriorated paint must be wet scraped prior to repainting or encapsulation	\$3/ft ²
Component removal and replacement	\$5-10/lf or ft ²

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Component enclosure with vinyl or metal siding- Deteriorated paint must first be stabilized before enclosure. Deteriorated substrates and causes of such deterioration must be corrected before enclosure.	\$5-10/lf or ft ²
Lead Paint removal and repainting with lead-free paint	\$5-10/lf or ft ²
Encapsulation – Deteriorated paint must first be stabilized before encapsulation with a lead-paint Encapsulate as per manufacturer's instructions. Deteriorated substrates and causes of such deterioration must be corrected before encapsulation.	\$5-10/lf or ft ²

Hazard – Window Systems (includes interior and exterior components)

Dust removal and paint film stabilization for window components listed - includes wet scraping and repainting (entire window system) – Deteriorated paint must be wet scraped prior to repainting or encapsulation	\$150/window
Window system removal and replacement	\$250/window
Lead Paint removal and repainting with lead-free paint	\$5-10/lf or ft ²
Friction and impact surfaces must be corrected for all non-intact lead-painted surfaces	\$5-10/lf or ft ²

Hazard – Doors (includes both doors and casings)

Dust removal and paint film stabilization for the door components listed – Deteriorated paint must be wet scraped prior to repainting or encapsulation	\$50/door
Interior door system removal and replacement	\$200/door
Exterior door system removal and replacement	\$350/door
Lead Paint removal and repainting with lead-free paint	\$5-10/lf or ft ²
Friction and impact surfaces must be corrected for all non-intact lead-painted surfaces	\$5-10/lf or ft ²

Hazard – Exterior Wall

Paint film stabilization for the exterior wall, includes wet scraping and repainting – Deteriorated paint must be wet scraped prior to repainting, enclosure or encapsulation	\$3/ ft ²
Component enclosure with vinyl or metal siding	\$5-10/lf or ft ²
Lead Paint removal and repainting with lead-free paint	\$5-10/lf or ft ²
Friction and impact surfaces must be corrected for all non-intact lead-painted surfaces	\$5-10/lf or ft ²

Hazard – Interior Walls and Ceiling

Paint film stabilization for the components listed, includes wet scraping and repainting – Deteriorated paint must be wet scraped prior to repainting or encapsulation	\$3/sf
Enclose with airtight drywall or other airtight casing	\$5-10/lf or ft ²
Lead Paint removal and repainting with lead-free paint	\$5-10/lf or ft ²
Friction and impact surfaces must be corrected for all non-intact lead-painted surfaces	\$5-10/lf or ft ²

Hazard – Exterior Soil – no visible paint chips on bare soil is a clearance criteria concern

HEPA vacuuming soil surface around the perimeter drip-line of the dwelling in the vicinity of identified lead-based paint, to remove visible paint chips, followed by installing landscape fabric and cover with at least 2 inches of wood mulch or sod a minimum 3 feet from dwelling wall	\$3/ft ²
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A clearance test is required upon completion of renovation and final clean. After all renovation activities have been completed and clearance established, a certificate of Lead-Based Paint Compliance may be appended to this report.

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3. Re-evaluation and Monitoring Schedule:

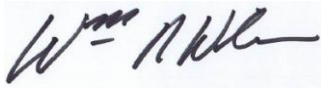
Each of these treatments will need to be reexamined periodically to make certain that they remain effective and to ensure that new lead-based paint hazards do not appear. The interim controls shown above are less expensive initially, but they may be more expensive in the long run since they need to be reevaluated more frequently. The replacement and paint removal methods are more expensive initially, but do not require any reevaluation. The owner should monitor the condition of the paint at least annual annually or if there is some indication that paint might be failing. A professional reevaluation may also be needed. See appendix 1 – HUD Table 6 Standard Reevaluation Schedule for more specific information.

4. Resident Notification of this Risk Assessment

The project manager must provide the results of this risk assessment to the residents in the dwelling. After all renovation activities have been completed and clearance established, a certificate of Lead-Based Paint Compliance may be appended to this report.

5. Signature (Risk Assessor) and Date

I certify that to the best of my knowledge this report accurately reflects the location and condition of the lead based paint contained on the dwelling on the date of the investigation. This risk assessment report is valid for the day tested and due to the nature of changing or deteriorating conditions, no representation can be made beyond the date of the investigation.



Bill Wilson
Certified Risk Assessor
FL-R-72967-1

April 3, 2013
Date of Risk Assessment

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Appendix 1 – HUD Table 6 Standard Reevaluation Schedule

Table 6.1 Standard Reevaluation Schedules

Schedule	Evaluation Results	Action Taken	Reevaluation Frequency and Duration	Visual Survey (by owner or owner's representative)
1	Combination risk assessment/inspection finds no leaded dust or soil and no lead-based paint.	None.	None.	None.
2	No lead-based paint hazards found during risk assessment conducted before hazard control or at clearance (hazards include dust and soil).	None.	3 Years.	Annually and whenever information indicates a possible problem.
3	The average of leaded dust levels on all floors, interior window sills, or window troughs sampled exceeds the applicable standard, but by less than a factor of 10.	<p>A. Interim controls and/or hazard abatement (or mixture of the two), including, but not necessarily limited to, dust removal. This schedule does not include window replacement.</p> <p>B. Treatments specified in section A plus replacement of all windows with lead hazards.</p> <p>C. Abatement of all lead-based paint using encapsulation or enclosure.</p> <p>D. Removal of all lead-based paint.</p>	<p>1 Year, 2 Years.</p> <p>1 Year.</p> <p>None.</p> <p>None.</p>	<p>Same as Schedule 2, except for encapsulants. The first visual survey of encapsulants should be done one month after clearance; the second should be done 6 months later and annually thereafter.</p> <p>Same as Schedule 3 above.</p> <p>None.</p>
4	The average of leaded dust levels on all floors, interior window sills, or window troughs sampled exceeds the applicable standard by a factor of 10 or more.	<p>A. Interim controls and/or hazard abatement (or mixture of the two), including, but not necessarily limited to dust removal. This schedule does not include window replacement.</p> <p>B. Treatments specified in section A plus replacement of all windows with lead hazards.</p> <p>C. Abatement of all lead-based paint using encapsulation and enclosure.</p> <p>D. Removal of all lead-based paint.</p>	<p>6 Months, 1 Year, 2 Years.</p> <p>6 Months, 2 Years.</p> <p>None.</p> <p>None.</p>	<p>Same as Schedule 3.</p> <p>Same as Schedule 3.</p> <p>Same as Schedule 3.</p> <p>None.</p>
5	No leaded dust or leaded soil hazards identified, but lead-based paint or lead-based paint hazards are found.	<p>A. Interim controls or mixture of interim controls and a batement (not including window replacement).</p> <p>B. Mixture of interim controls and abatement, including window replacement.</p> <p>C. Abatement of all lead-based paint hazards, but not all lead-based paint.</p> <p>D. Abatement of all lead-based paint using encapsulation or enclosure.</p> <p>E. Removal of all lead-based paint.</p>	<p>2 Years.</p> <p>3 Years.</p> <p>4 Years.</p> <p>None.</p> <p>None.</p>	<p>Same as Schedule 3.</p> <p>Same as Schedule 3.</p> <p>Same as Schedule 3.</p> <p>Same as Schedule 3.</p> <p>None.</p>
6	Bare leaded soil exceeds standard, but less than 5,000 µg/g.	Interim controls.	None.	Three months to check new ground cover, then annually to identify new bare spots.
7	Bare leaded soil greater than or equal to 5,000 µg/g.	Abatement (paving or removal).	None.	None for removal, annually to identify new bare spots or deterioration of paving.

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Appendix 2 – Lead Clearance Test Criteria

- *Please note that both EPA and HUD require occupant protection procedures for all disturbances of lead-based paint in excess of de-minimus levels until clearance is achieved.*

The U.S. Environmental Protection Agency has established criteria for Lead and Lead Dust Hazards as follows:

40 CFR 745.65 Lead-based paint hazards.

(a) Paint-lead hazard. A paint-lead hazard is any of the following:

- (1) Any lead-based paint on a friction surface that is subject to abrasion and where the lead dust levels on the nearest horizontal surface underneath the friction surface (e.g., the window sill, or floor) are equal to or greater than the dust-lead hazard levels identified in paragraph (b) of this section.
- (2) Any damaged or otherwise deteriorated lead-based paint on an impact surface that is caused by impact from a related building component (such as a door knob that knocks into a wall or a door that knocks against its door frame).
- (3) Any chewable lead-based painted surface on which there is evidence of teeth marks.
- (4) Any other deteriorated lead-based paint in any residential building or child-occupied facility or on the exterior of any residential building or child-occupied facility.

(b) Dust-lead hazard. A dust-lead hazard is surface dust in a residential dwelling or child-occupied facility that contains a mass-per-area concentration of lead equal to or exceeding 40 ug/ft² on floors or 250 ug/ft² on interior window sills based on wipe samples.

(c) Soil-lead hazard. A soil-lead hazard is bare soil on residential real property or on the property of a child-occupied facility that contains total lead equal to or exceeding 400 parts per million (mg/g) in a play area or average of 1,200 parts per million of bare soil in the rest of the yard based on soil samples.

Please be aware that if a lead paint clearance test is conducted on this dwelling certain components and conditions must be evaluated as required by HUD and EPA. These include, but are not limited to:

- Deteriorated lead-based paint, either assumed or identified
- Lead-based paint, either assumed or identified, covering deteriorated substrates
- Visible paint chips on bare soil in the vicinity of identified or assumed lead-based paint
- Elevated levels of lead in soil
- Friction or impact surfaces of identified or assumed lead-based paint
- Visible dust or debris in the vicinity of lead-paint abatement or interim controls activities
- Elevated lead dust levels determined by clearance sampling

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Appendix 3 - Testing Protocol Used:

XRF Testing

Portable XRF lead-based paint analyzers are the most common primary analytical method for inspections in housing because of their demonstrated abilities to determine if lead-based paint is present on many surfaces and to measure the paint without destructive sampling or paint removal, as well as their high speed and low cost per sample.

Portable XRF instruments expose a building component to X rays or gamma radiation, which causes lead to emit X rays with a characteristic frequency or energy. The intensity of this radiation is measured by the instrument. The inspector must then compare this displayed value (reading) with the inconclusive range or threshold specified in the XRF Performance Characteristic Sheet. Note: the RMD LPA-1 does not give inconclusive readings. All readings from the RMD LPA-1 XRF device are either positive or negative for lead-based paint. Because the thresholds shown in the Performance Characteristic Sheet (for Quick Mode) are based on 1.0 mg/cm², positive and negative readings are consistent with the HUD definition of lead-based paint for identification and disclosure purposes.

Building Components Tested

All room equivalents (e.g. room, house exterior, foyer, etc.) are tested. All testing combinations within each room equivalent are tested. All painted surfaces (surfaces coated with paint, shellac, varnish, stain, paint covered with wallpaper, or any other coating) are tested.

At least one XRF reading on each testing combination in each room equivalent are tested. For walls, at least one reading on each wall in a room equivalent is tested.

If a building component was not tested, contact Lead Paint Solutions for additional testing or assume the surface is coated with LBP.

XRF Instrument Specifications:

Instrument Manufacturer:	Radiation Monitoring Devices, Inc. (RMD)
Model:	LPA-1
Serial Number:	3319
Modes of Operation:	Time Corrected Mode for Calibrations Quick Mode for Inspection
Radioactive Source:	Cobalt 57
Age of Radioactive Source:	Assayed March 13, 2013
Calibration Standard:	Standard Block of known 1.0 mg/cm ² lead content

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Appendix 4 - XRF Performance Characteristics Sheets

EFFECTIVE DATE: October 24, 2000

EDITION NO.: 4

MANUFACTURER AND MODEL:

Make: *Radiation Monitoring Devices*
Model: *LPA-1*
Source: *57 Co*
Note: This sheet supersedes all previous sheets for the XRF instrument of the make, model, and source shown above for instruments sold or serviced after June 26, 1995. For other instruments, see prior editions.

FIELD OPERATION GUIDANCE

OPERATING PARAMETERS:

Quick mode or nominal 30-second standard mode readings.

XRF CALIBRATION CHECK LIMITS :

0.7 to 1.3 mg/cm ² (inclusive)

SUBSTRATE CORRECTION:

For XRF results below 4.0 mg/cm², substrate correction is recommended for:

Metal using 30-second standard mode readings.
None using quick mode readings.

Substrate correction is not needed for:

Brick, Concrete, Drywall, Plaster, and Wood using 30-second standard mode readings
Brick, Concrete, Drywall, Metal, Plaster, and Wood using quick mode readings

THRESHOLDS:

30-SECOND STANDARD MODE READING DESCRIPTION	SUBSTRATE	THRESHOLD (mg/cm ²)
Results corrected for substrate bias on metal substrate only	Brick	1.0
	Concrete	1.0
	Drywall	1.0
	Metal	0.9
	Plaster	1.0
	Wood	1.0

QUICK MODE READING DESCRIPTION	SUBSTRATE	THRESHOLD (mg/cm ²)
Readings not corrected for substrate bias on any substrate	Brick	1.0
	Concrete	1.0
	Drywall	1.0
	Metal	1.0
	Plaster	1.0
	Wood	1.0

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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 approximately 150 test locations in July 1995. The instrument that performed testing in September had a new source installed in June 1995 with 12 mCi initial strength.

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 readings are outside the acceptable calibration check range, follow the manufacturer's instructions to bring the instruments 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. Use either 15-second readings or 60-second readings.

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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 housing a result is defined as the average of three readings. In multifamily housing, a result is 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 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 results.

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

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.

BIAS AND PRECISION:

Do not use these bias and precision data to correct for substrate bias. These bias and precision data were computed without substrate correction from samples with reported laboratory results less than 4.0 mg/cm² lead. The data which were used to determine the bias and precision estimates given in the table below have the following properties. During the July 1995 testing, there were 15 test locations with a laboratory-reported result equal to or greater than 4.0 mg/cm² lead. Of these, one 30-second standard mode reading was less than 1.0 mg/cm² and none of the quick mode readings were less than 1.0 mg/cm². The instrument that tested in July is representative of instruments sold or serviced after June 26,

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1995. These data are for illustrative purposes only. Actual bias must be determined on the site. Results provided above already account for bias and precision. Bias and precision ranges are provided to show the variability found between machines of the same model.

30-SECOND STANDARD MODE READING MEASURED AT	SUBSTRATE	BIAS (mg/cm ²)	PRECISION * (mg/cm ²)
0.0 mg/cm ²	Brick	0.0	0.1
	Concrete	0.0	0.1
	Drywall	0.1	0.1
	Metal	0.3	0.1
	Plaster	0.1	0.1
	Wood	0.0	0.1
0.5 mg/cm ²	Brick	0.0	0.2
	Concrete	0.0	0.2
	Drywall	0.0	0.2
	Metal	0.2	0.2
	Plaster	0.0	0.2
	Wood	0.0	0.2
1.0 mg/cm ²	Brick	0.0	0.3
	Concrete	0.0	0.3
	Drywall	0.0	0.3
	Metal	0.2	0.3
	Plaster	0.0	0.3
	Wood	0.0	0.3
2.0 mg/cm ²	Brick	-0.1	0.4
	Concrete	-0.1	0.4
	Drywall	-0.1	0.4
	Metal	0.1	0.4
	Plaster	-0.1	0.4
	Wood	-0.1	0.4

* Precision at 1 standard deviation.

CLASSIFICATION RESULTS:

XRF results are classified as positive if they are greater than the upper boundary of the inconclusive range, and 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. Earlier editions of this *XRF Performance Characteristics Sheet* did not include both bounds of the inconclusive range as "inconclusive." While this edition of the Performance Characteristics Sheet uses a different system, the specific XRF readings that are considered positive, negative, or inconclusive for a given XRF model and substrate remain unchanged, so previous inspection results are not affected.

DOCUMENTATION:

An EPA 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. A HUD document titled *A Nonparametric Method for Estimating the 5th and 95th Percentile Curves of Variable-Time XRF Readings Based on Monotone Regression* provides supplemental information on the methodology for variable-time XRF instruments. A copy of this document can be obtained from the HUD lead web site, www.hud.gov/lea.

This edition of the XRF Performance Characteristic Sheet was developed by QuanTech, Inc., under a contract from the U.S. Department of Housing and Urban Development (HUD). 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*.

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Explanation of Zero Measurements and Negative Values

Operation of the LPA-1 analyzer and its operational statistics Zero measurements and negative values

XRF analysis, like all other methods of measurements, is influenced by both random and systematic errors. The random errors are those that their magnitude can be reduced but not eliminated such as the effect of the radioactive decay of the source in measurements. The systematic errors are those that can be avoided, or at least corrected for. For example the effect of calibration samples, electronics, substrate, and mathematical algorithms.

The statistical terms such as precision, bias, accuracy, and uncertainty refer to these errors and are mathematical approaches for defining and measuring the contribution of each parameter. The uncertainty of a measurement is the summation of the contribution of precision, accuracy, and bias for that measurement.

The scatter on a single substrate represents random errors. We define this to be the *precision*. Strictly speaking, precision is the standard deviation of this scatter. The error in the mean value of lead, for a single substrate, represents a systematic error. Some would refer to this as the bias for this particular substrate, i.e., a particular piece of wood. We use the word *bias* to refer to the average of systematic errors for substrates class not only a particular component in that class.

The scatter in the systematic errors (strictly speaking, the standard deviation in the errors in the mean) we call *accuracy*. For any single reading obtained by the LPA-1, there will be some uncertainty which results from the counts used in this reading (i.e., the precision) and the systematic error in our algorithm (which is quantified by the accuracy). Because these two factors are statistically independent, the total uncertainty is given by the square of the sum of the squares of precision and accuracy.

The contribution of random and systematic errors in an analysis is best represented by a statistical distribution curve. A series of replicate measurements results in a statistical distribution curve represented by Gaussian or Normal distribution. The curve is characterized by number of measurements, range or spread, mean, and scatter or divergence. The standard deviation (sigma) for such a curve is calculated to be the square root of the variance. In practice it can be stated that the probability is 68.3% (1 sigma or 1 standard deviation) that any individual measurement will have a value between the average of all readings plus and minus the standard deviation. For 2sigma or 2 standard deviation the probability is 95.4%.

From the above explanation, one can conclude that a set of repeated measurements for a zero lead sample would result in a Gaussian distribution curve with mean value of zero. This curve implies that for a perfect zero sample fifty out of one hundred measurements would be to the negative side of the curve as the other fifty would lay on the positive side. Therefore, depending on the standard deviation and degree of confidence a zero lead sample can have measured values ranging from negative to positive numbers.

Therefore, the existence of negative values should be expected and interpolated as zero lead content due to statistical nature of the XRF measurements. The lack of such negative values suggests that data have been manipulated and should be questioned.

Both the HUD and the EPA recognize the statistical nature of the analytical measurements and the possibility of obtaining negative values where the lead content is around zero. In practice, the interpretation of a negative number has been as a reading that is below the regulatory Action Level threshold and as a result is negative lead.

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Appendix 5 EPA LBP Enclosure Rules

Appendix 7.2: Types of Lead-Based Paint Enclosure Systems

General Notes

The following notes apply to several of the Enclosure Systems used to seal interior and exterior surfaces of walls, ceilings, floors, doors, windows and trim which contain lead-based paint.

- a. Application of gypsum board, plywood paneling, or solid board paneling directly to existing wall or ceiling surfaces requires anchorage to structural wood or steel joists or ceiling joists or rafters by suitable screws penetrating the structure at least $\frac{3}{4}$ ". Attachment may also employ a combination of screws and construction adhesive. For application directly to masonry surfaces, case-hardened masonry nails, of sufficient length to extend into the masonry, and construction adhesive are required.
- b. Furring may be required to produce a true and even support for panel or board finish materials. Furring may be wood 1" x 2" strips or metal channels. Resilient metal channels may be used where additional sound attenuation is desired. Furring may be applied vertically or horizontally to accommodate the direction of the finish material. Furring shall be anchored to structural studs, ceiling joists or rafters preferably with bugle-head screws or annular-ringed nails; to steel studs or channel framing, anchorage shall be by bugle-head screws. Anchorage of furring strips to concrete or masonry walls shall be by case-hardened masonry nails, anchors, or toggle bolts. Furring shall not be more than 16" on center of walls or 24" on center for ceilings.
- c. Gypsum, cement, or metal lath shall be anchored to structural wood or steel studs, joints, or rafters, or to wood or metal furring by bugle-head screws. Anchorage of metal lath to concrete or masonry walls shall be by case-hardened masonry nails, power or hand drive.
- d. All enclosure systems (wood panels, boards, plaster and stucco systems, siding and tile) shall include the sealing of all joints, edges and corners with suitable materials. Penetrations of walls and ceilings serving electrical outlets, switches and fixtures, heating and cooling duct registers, plumbing and heating pipes shall be sealed by collars, foam or other approved devices to prevent dust from lead-based painted surfaces escaping enclosed surfaces. All sealing materials shall have an expected service life of a minimum of twenty years.
- e. Enclosing systems shall leave interior space dimensions, areas and ceiling heights sufficient to meet all building codes and minimum property standards. Exterior enclosure systems shall permit structures to meet zoning restriction for set back requirements.
- f. For enclosure systems which do not produce an air-tight enclosure such as plaster and stucco systems with control joints, wood paneling, and aluminum and vinyl siding, the

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covering of the surface by a breathable wrap such as Tyvek® should be required to prevent lead-containing dust particles from migrating. Where breathable cloth is used to enclose existing wall surfaces, required ventilation strips and openings shall not be covered but shall remain open.

1. Gypsum Board Applied Directly to Existing Walls or Ceiling Surfaces

Enclosure of lead-based paint on gypsum board or plaster surfaces may be achieved by application of 1/4" or 3/8" thick standard gypsum board directly to existing walls and ceilings. Gypsum board with tapered edges shall be attached with drywall screws or a combination of screws and construction adhesive. If quarter inch thick drywall is used, the surface to be enclosed must be essentially free of holes.

Screws shall be of sufficient length to pass through the existing drywall or plaster and intrude into the structural wood studs or ceiling joist 5/8" - 3/4".

Finishing materials including joint tape, corner and edge beading and spackle shall be as approved by gypsum board manufacturers and installed in accordance with their recommendations.

In high moisture areas, such as laundries and baths, moisture-resistant gypsum board shall be used. In bathtub or shower enclosures to be covered by tile, cement board shall be used.

All joints, corners, and edges and all surface penetrations for electrical outlets, switches, light fixtures, pipes and duct grilles and registers shall be sealed by means of collars, foam, or other approved devices to prevent dust from lead-contaminated surfaces from reaching newly enclosed areas.

Gypsum board shall be applied in accordance with the General Notes.

2. Gypsum Board Applied to Furring Strips

Where existing plaster or gypsum board surfaces are not suitable for direct application, a new layer of gypsum board may be applied over furring strips. Furring may be designated where the surface is uneven or has deteriorated or to cover existing surface moldings.

Furring may be wood 1" x 2" strips or metal channels shimmed as required to produce a true and even surface. Resilient metal channels may be used where additional sound attenuation is desired. The thickness of gypsum board shall be a minimum of 1/2" and spacing of furring shall meet industry standards.

Furring shall be anchored to structural studs, ceiling joists or roof rafters not more than 16" on center preferably with annular ringed nails penetrating the members approximately 3/4".

Gypsum board panels shall be applied to furring strips as described in Section 1 and in accordance with the General Notes.

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3. Lath and Plaster Applied Directly to Existing Wall and Ceiling Surfaces

Where existing wall and ceiling surfaces are sound and even, enclosure may be achieved by application of expanded metal lath or gypsum lath and required base and finish plaster coats. Selection of a plaster system depends on the desired surface and finish characteristics such as a smooth, sanded, hard or moisture resistant. Plasters may be job-mixed or ready-mixed systems as needed to satisfy the requirement of the job. Job-mixed plasters include lime plasters, sand gauging plasters, and Keenes cement.

Lath systems include gypsum lath and a variety of metal laths. Gypsum lath is usually available in sheets 16" x 48". Lath shall be applied as described in the General Notes.

4. Lath and Plaster Applied Over Furring strips

Where instability or unevenness of the existing surface requires, furring shall be installed prior to application of lath and plaster.

Furring may be 1" x 2" x 2" x 2" wood strips, metal hat-shaped channels, resilient metal channels or plaster lath strips. Anchorage of furring shall be to structural members, studs, joists or rafters by suitable nails, screws or other devices as described in the General Notes.

Lath may be gypsum lath, 16" x 48", or expanded metal or ribbed metal.

As an alternative to a conventional 3-coat plaster system, a veneer system of one or two veneer coats to a thickness of 1/16" to 1/8" may be used. Veneer plaster is applied to a specially prepared gypsum baseboard.

For spaces where high-moisture is expected, such as steam rooms or swimming pool enclosures, Keenes cement lime-sand plaster is recommended. Edges, corners, joints, and spaces around openings for electrical, plumbing and heating devices shall be properly sealed by materials with a life-expectancy of not less than 20 years from the passage of dust particles.

Application shall also be in accordance with the General Notes.

5. Stucco and Metal Lath Applied Directly in Wall and Ceiling Surfaces

Where greater surface durability, water resistance, variety of texture or integral color is desired, stucco systems may be used in place of gypsum plaster. When used as a lead-based paint enclosure system, stucco - a wet mixture of portland cement and lime - is trowel or spray applied to anchored expanded metal lath to produce a complete seal of wall or ceiling surfaces.

Stucco may also be used to enclose lead-based paint surfaces over expanded metal lath or over rigid foam board. The latter systems using polymer-based or polymer-modified plasters are spray or trowel applied to insulation board to which a mesh reinforcement has been attached. These systems are known as Exterior Insulation Finish (EIF) and should be installed in accordance with recommendations of the Exterior Insulation Manufacturers Association (EIMA). In order to prevent lead-contaminated dust from leaving the surface and migrating through control joints a breathable wrap material such as Tyvek® may be required.

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All stucco systems for interior or exterior lead-based paint enclosures shall provide control joints to prevent surface cracking. Other recommendations in General Notes shall also apply.

6. Stucco Applied to Metal Lath on Furring Strips

Stucco may be used to cover lead-based paint on interior walls and ceilings and exterior surfaces of many construction systems where the condition of the substrate requires furring strips for adequate anchorage of the lath.

Stucco, usually applied to lath in three coats - scratch, brown, and a finish coat - produces a highly water-resistant surface. Finish coats are available in a variety of textures and colors.

Lath for stucco is available in expanded metal, ribbed and self-furring lath. Accessories for control joints, reinforcing and corner beads are available.

Furring may be wood, 1" x 2" or 2" x 2" strips or metal hat-shaped channels. Rigid foam board for EIF systems may also be used.

Recommendations included in General Notes should be followed for stucco systems.

7. Plywood Paneling Applied Directly to Existing Wall and Ceiling Surfaces

Prefinished plywood panels or panels to be finished after installation, usually 1/4" thick, may be installed to walls and possibly to ceiling surfaces where the condition of the surface is suitable for application using annular-ringed nails and construction adhesive.

Care must be exercised in sealing all joints and edges to prevent passage of lead-containing dust particles. Non-hardening sealants such as silicone or urethane having a minimum 20 year life expectancy must be used for this purpose.

Lead-painted exterior surfaces may be enclosed with plywood panels such as Texture 1-11 or other plywood sheets, usually 5/8" to 3/4" thick. Application of these panels directly to existing surfaces requires anchorage to structural members using suitable nails or a combination of nails and construction adhesive. Passage of lead-containing dust must be prevented by sealing all edges and joints by suitable sealants and where necessary a surface wrap with a breathable cloth such as Tyvek®.

Additional recommendations listed under General Notes should also be followed.

8. Plywood Paneling Applied Over Furring Strips

Where plywood is used to enclose lead-based painted surfaces, which are unsuitable for direct attachment of plywood, furring strips, shimmed as required, may be used to provide a sound, level base to which plywood may be secured.

Wood furring, usually 1" x 2" or 2" x 2" strips, 16" to 24" on center is securely anchored using nails or screws to existing structural members or by means of masonry anchors, nails or toggle bolts to brick or masonry block walls.

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All edges and corners of plywood panels must be sealed and surfaces wrapped where required to prevent dust migration. Other appropriate recommendations listed under General Notes must also be followed.

9. Solid Board Paneling Applied Directly to Wall or Ceiling Surfaces

Solid board paneling may be used to enclose lead-based painted interior wall and ceiling surfaces and exterior wall surfaces by application directly to suitable substrates.

Interior paneling may be unfinished or prefinished softwoods such as cedar, cypress, redwood, fir, and pine and hardwoods such as oak, elm, ash, fruitwoods, maple and walnut.

Exterior woods are usually the more insect-resistant woods such as cedar, cypress and redwood.

Most solid wood paneling is finished with tongue and groove or shiplapped edges for horizontal or vertical application or with interlocking edges, tapered for horizontal application. Some particle board material for horizontal application is also manufactured. Wood shingles, usually cedar, may also be used for exterior enclosure. Anchoring devices may be suitable nails or staples often used with a construction adhesive.

For most systems a breathable cloth wrap, such as Tyvek® is recommended as are other General Note suggestions.

10. Solid Board Paneling Applied Over Furring Strips

Where the condition of the surface to be enclosed lacks stability or evenness, the solid board paneling materials, minimum thickness of 5/8", as described in Section 9 above, may be installed over furring strips shimmed to produce an even, stable surface.

Furring may be wood 1" x 2" or 2" x 2" strips applied horizontally to accommodate vertical paneling or vertically to accommodate horizontal paneling. A wrap of the lead-based painted surface is usually required prior to installing furring. A breathable plastic cloth such as Tyvek® is used as wrap material to prevent lead-contaminated dust particles from migrating. Application shall also be in accordance with the General Notes.

11. Extruded or Shaped Sheet Metal over Existing Trim

In some construction situations, door and window frames and trim containing lead-based paint may be enclosed by the use of extruded vinyl shapes more cost effectively than removal and replacement of the in-place trim. Enclosure of the existing trim surfaces must completely seal all edges, corners and joints of the new trim covers with sealants such as silicone or urethane having a life expectancy of at least 20 years. Attachment may be accomplished by suitable nails, screws or clips and construction adhesive.

12. Ceramic Tile Applied in "Thin-Set" Mastic Directly to Existing Surfaces

Where condition of existing walls or floors allows, ceramic tile may be applied by "thin-set" method to surfaces containing lead-based paint to be enclosed. Tile should be pressed into a full-covering layer of mastic and allowed to set before applying grout to all surface joints. Sufficient grout shall be used to fill all spaces around and between tiles.

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13. Ceramic Tile Applied in Mud Coat to Lath Directly to Existing Surfaces

Where it is desired to set ceramic tile in a mud coat, expanded metal lath or cement board lath is applied to existing lead-based painted surfaces. Tile is then set in a mud coat to the lath, allowed to set and then grouted with full joint grout. General Notes requirements also apply.

14. Ceramic Tile Applied in "Thin-Set" Mastic Over Furring

Where the surface of existing lead-based painted walls requires furring to achieve a sound, level support for application of ceramic tile, a cement board panel may be anchored to wood strip, metal channel or cement board strips shimmed as required. Ceramic tile is then set in mastic on the furred cement board base. After the mastic has set up, all edges and joints between the tile are grouted with grout forming a full joint in all voids. General Notes requirements also apply.

15. Ceramic Tile Applied in "Mud Coat" Over Furring

Ceramic tile to be used for enclosing lead-based painted surfaces may require a "mud coat" setting bed on a furred base. This may be especially true of the less precise hand-formed floor tile which requires a thicker setting bed permitting adjustments to produce an even floor.

On walls, metal lath or cement board lath may be attached to furring as a base for mud-coat setting bed. Furring should be shimmed as required to produce a level base for tile.

On floors, cement board, furred or shimmed as required to produce a true and level surface, is a suitable base for a "mud coat" application. General Note requirements apply.

After the tile has set, joints are grouted with suitable joint materials. Ceramic tile on floors requires a sand-mixed grout to produce a strong joint.

16. Brick Veneer Used to Enclose Lead-Based Painted Surfaces

A single width of brick may be applied as a brick veneer to enclose lead-based painted surfaces on both interior and exterior surfaces.

The first course of brick must be provided with the adequate structural support of a beam or steel shelf angle designed and attached to carry the load of the brick veneer wall without excessive deflection. The brick shall be laid in full beds or mortar, with full head joints attached to existing walls by suitable galvanized or stainless anchors imbedded in masonry joints, 24" on center, vertically and horizontally. All joints shall be tooled to produce a dense mortar joint.

At returns to frames, jambs, heads and sills of window and door openings, provision shall be made to seal existing surfaces from dust migration. A wrap cloth of breathable material such as Tyvek® may be required on exterior walls, especially where weep holes are provided to control moisture which has penetrated brick surfaces.

All building code room size and area requirements and exterior set-back restrictions must not be violated by the addition of the brick veneer.

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17. Masonry Block Veneers Used to Enclose Lead-Based Painted Walls

A nominal 4" concrete masonry veneer may be applied to enclose lead-based painted surfaces on both interior and exterior wall surfaces.

All requirements listed above for brick veneer including structural support, anchorage to existing structure, treatment of joints and sealing of voids and joints shall also apply as shall requirements of codes and zoning.

18. Underlayment Grade Plywood, Oriented Strand Board or Particle Board Applied Over Existing Flooring

Underlayment grade plywood, oriented strand board or particle board, nominal thickness of 1/4" may be used to enclose lead-based painted wood floors. The underlayment should be applied just prior to the finish material and should be protected from damage its surface. Panel end joints should be staggered with respect to each other, and all joints should be offset with respect to joints in the subfloor. Panel edges and ends should be butted to a close but not tight fit (1/32" space). Panels should be nailed 6" along edges and 8" on center each way throughout the remainder with 3d annular-ringed nails or 16 gauge staples, 3" on center along edges and 6" on center throughout. End joints shall be filled and thoroughly sanded.

Underlayment is suitable as a base for resilient tile such as rubber, vinyl and cork, sheet flooring and carpeting usually with a pad. It may also be used as a base for think, mastic-set strip or parquet wood finish systems.

19. Vinyl Siding

Prefinished vinyl siding, having a life expectancy of at least 20 years, may be installed over a variety of existing exterior wall surfaces to enclose lead-based paint. Installation of a building wrap system using breathable cloth such as Tyvek® and sealing all joints with silicone or urethane sealers should be used to ensure that dust particles cannot migrate through the vinyl siding system.

All siding panels, components and trim shall be installed in accordance with manufacturer's recommendations using appropriate fastening devices for proper anchorage.

20. Aluminum Siding

Prefinished aluminum, siding having a life expectancy of at least 20 years, may be installed over a variety of existing exterior wall surfaces to enclose lead-based painted surfaces. Siding installation application recommendations are similar to those for vinyl siding in Section 19 above.

Anchorage of all siding panels, trim and components for aluminum siding shall employ the use of aluminum nails. All siding panels, components and trim shall be installed in accordance with manufacturer's recommendations using appropriate fastening devices for proper anchorage.

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◆ ————— Step-by-Step Summary ————— ◆

Interim Control: How To Do It

1. Owners of properties in good condition may decide to proceed directly to interim control without a risk assessment. This involves stabilizing any deteriorated paint (see Section II), on the assumption that all deteriorated paint contains lead-based paint, thoroughly cleaning all surfaces (see Section IV), and covering all bare soil (see Section V). These measures should be followed by a risk assessment (not a risk assessment screen) to determine if the property meets clearance standards and if any hazards were left uncorrected. All interim control activities should be carried out in accordance with the procedures described in these *Guidelines*.
2. Alternatively, an owner may first have an independent risk assessment performed by a certified professional to determine if lead-based paint hazards exist and to minimize hazard control activities.
3. Together with a certified risk assessor, planner, or other designer, develop a site-specific lead hazard control plan based on the hazards identified, the feasibility of the control measures, occupant protection, and financing. For interim controls and some abatement techniques, the plan should include how and when ongoing monitoring by the owner and reevaluation by a certified risk assessor or certified inspector will be performed. (See Chapter 6 for standard reevaluation schedules.)
4. For building components, determine which hazards will be addressed with interim controls (dust removal, paint stabilization, and/or control of friction/abrasion points). For lead-contaminated soil, decide which interim control measure is appropriate for the climate and the planned use of the area.
5. Develop specifications (if appropriate). The amount of detail provided should be commensurate with the size of the job. The specifications should state how any abatement activities and other construction work (e.g., weatherization) will coincide with the interim control work. It may be preferable to combine interim controls with abatement in many cases.
6. Although interim controls are not expected to generate hazardous waste, the planner or risk assessor should make this assessment for each project and notify local authorities if the local jurisdiction requires it.
7. Select a qualified, trained contractor to complete the hazard control work. For some small jobs, onsite maintenance workers may be able to perform the work. In either case, Occupational Safety and Health Administration (OSHA) regulations require all interim control workers to be trained.
8. Select the appropriate interior and/or exterior Worksite Preparation Level (from Chapter 8) to protect residents.
9. Notify residents of the dwelling and nearby dwellings of the work and when it will begin. Distribute educational materials furnished by the U.S. Environmental Protection Agency (EPA) and/or the State or local government to residents about lead poisoning and lead-safe practices.
10. Correct any existing conditions that could undermine the success of the interim controls (e.g., structural deficiencies, moisture problems, uncleanable surfaces).
11. For exterior work, preinterim control soil samples should be collected but not necessarily analyzed until clearance soil samples have been collected, analyzed, and compared to clearance standards. If soil levels are below applicable limits, the baseline samples need not be analyzed (see Chapter 15).

◆ ————— Step-by-Step Summary (continued) ————— ◆

12. Execute interim control work. See the Step-by-Step Summaries in each section of this chapter for information about dust removal, paint film stabilization, friction and impact surface treatments, and interim soil controls.
13. Store all waste in a secure area and make sure that it is properly labeled (see Chapter 10). Dispose of all waste properly.
14. Conduct daily and final cleanups (see Chapter 14).
15. Have an independent, certified inspector technician or risk assessor conduct a clearance examination 1 hour after cleanup to let dust settle (see Chapter 15). If no preliminary risk assessment was performed, only a certified risk assessor can conduct the clearance examination/risk assessment. If clearance is not achieved, complete interim controls and/or reclean. Following a successful clearance examination, the property owner should receive documentation to that effect, including a schedule for required reevaluation (if applicable). Local authorities may also require a Statement of Lead-Based Paint Compliance.
16. Pay contractor and clearance examiner.
17. The owner should conduct ongoing maintenance and monitoring of interim controls to ensure that they remain in place. Periodic reevaluations by a certified risk assessor should be completed according to the reevaluation schedule in the hazard control plan of the property.
18. Maintain records of all lead hazard control, reevaluation, and monitoring activities and turn them over to any new owner upon sale of the property.

Appendix 7 HUD Guidelines Page 11-13 Paint Film Stabilization: How to do it

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Step-by-Step Summary

Interim Control: How To Do It

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2. Alternatively, an owner may first have an independent risk assessment performed by a certified professional to determine if lead-based paint hazards exist and to minimize hazard control activities.
3. Together with a certified risk assessor, planner, or other designer, develop a site-specific lead hazard control plan based on the hazards identified, the feasibility of the control measures, occupant protection, and financing. For interim controls and some abatement techniques, the plan should include how and when ongoing monitoring by the owner and reevaluation by a certified risk assessor or certified inspector will be performed. (See Chapter 6 for standard reevaluation schedules.)
4. For building components, determine which hazards will be addressed with interim controls (dust removal, paint stabilization, and/or control of friction/abrasion points). For lead-contaminated soil, decide which interim control measure is appropriate for the climate and the planned use of the area.
5. Develop specifications (if appropriate). The amount of detail provided should be commensurate with the size of the job. The specifications should state how any abatement activities and other construction work (e.g., weatherization) will coincide with the interim control work. It may be preferable to combine interim controls with abatement in many cases.
6. Although interim controls are not expected to generate hazardous waste, the planner or risk assessor should make this assessment for each project and notify local authorities if the local jurisdiction requires it.
7. Select a qualified, trained contractor to complete the hazard control work. For some small jobs, onsite maintenance workers may be able to perform the work. In either case, Occupational Safety and Health Administration (OSHA) regulations require all interim control workers to be trained.
8. Select the appropriate interior and/or exterior Worksite Preparation Level (from Chapter 8) to protect residents.
9. Notify residents of the dwelling and nearby dwellings of the work and when it will begin. Distribute educational materials furnished by the U.S. Environmental Protection Agency (EPA) and/or the State or local government to residents about lead poisoning and lead-safe practices.
10. Correct any existing conditions that could undermine the success of the interim controls (e.g., structural deficiencies, moisture problems, uncleanable surfaces).
11. For exterior work, preinterim control soil samples should be collected but not necessarily analyzed until clearance soil samples have been collected, analyzed, and compared to clearance standards. If soil levels are below applicable limits, the baseline samples need not be analyzed (see Chapter 15).

◆ ————— Step-by-Step Summary (continued) ————— ◆

12. Execute interim control work. See the Step-by-Step Summaries in each section of this chapter for information about dust removal, paint film stabilization, friction and impact surface treatments, and interim soil controls.
13. Store all waste in a secure area and make sure that it is properly labeled (see Chapter 10). Dispose of all waste properly.
14. Conduct daily and final cleanups (see Chapter 14).
15. Have an independent, certified inspector technician or risk assessor conduct a clearance examination 1 hour after cleanup to let dust settle (see Chapter 15). If no preliminary risk assessment was performed, only a certified risk assessor can conduct the clearance examination/risk assessment. If clearance is not achieved, complete interim controls and/or reclean. Following a successful clearance examination, the property owner should receive documentation to that effect, including a schedule for required reevaluation (if applicable). Local authorities may also require a Statement of Lead-Based Paint Compliance.
16. Pay contractor and clearance examiner.
17. The owner should conduct ongoing maintenance and monitoring of interim controls to ensure that they remain in place. Periodic reevaluations by a certified risk assessor should be completed according to the reevaluation schedule in the hazard control plan of the property.
18. Maintain records of all lead hazard control, reevaluation, and monitoring activities and turn them over to any new owner upon sale of the property.

Appendix 8 Glossary

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

Complete abatement and Interim controls.

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

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.

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

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

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 safely allow them to undertake risk assessments, inspections, or abatement work. risk assessors, inspectors, and Abatement Contractors should be certified by the appropriate local, State, or Federal agency.

Chewable surface: See **Chewed 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 windowsill.

Cleaning: The process of using a vacuum and wet cleaning agents to remove leaded dust; the process includes the removal of bulk debris from the work area. 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, or, in some circumstances, a Sampling Technician, 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.

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.

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 leadcontaminated dust and debris created during abatement.

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, alligatoring, cracking, or otherwise becoming separated from the substrate.

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

Environmental Intervention Blood-Lead Level (EIBL) child: A child who has a blood lead level at or above 20 µg/dL (micrograms of lead per deciliter of blood) in a single test or at 15-19 µg/dL in two tests taken at least 3 months apart.

Encapsulation: Any covering or coating that acts as a barrier between lead-based paint and the

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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.

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

Examination: See **Clearance examination**.

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

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

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.

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

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 (milligrams of lead per square centimeter of surface) as measured by XRF or laboratory analysis, or 0.5 percent by weight (5,000 µg/g, 5,000 ppm (parts per million), 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, leadcontaminated 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-contaminated dust: Surface dust in residences that contain an area concentration of lead in excess of the standard established by the EPA Administrator, pursuant to Title IV of the Toxic Substances Control Act. EPA standards for leaded dust for risk assessments are 40 µg/ft² (micrograms of lead per square foot) on floors and 250 µg/ft² on interior windowsills. The EPA standards for clearance are 40 µg/ft² on floors, 250 µg/ft² on interior windowsills and 400 µg/ft² on window troughs. The recommended standard for lead hazard screens for floors is 25 µg/ft² and for windowsills is 125 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 standard is 400 µg/g in play areas and 1200 µg/g in the rest of the yard.

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

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 leadbased paint hazard control work. See also **Certified**.

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.

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.

Microgram (µg): 1/1,000,000 of a gram; used to measure weight.

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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; and (3) that structural problems do not threaten the integrity of hazard controls or of known or suspected.

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.

Paint 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 optionally (5) document successful compliance with lead-based paint hazard control requirements or standards.

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, extensive dry scraping, and stripping in a poorly ventilated space using a volatile stripper are prohibited paint removal methods. Hydroblasting is not recommended.

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 dust containment 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.

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.

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.

Resident: A person who lives in a dwelling.

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 childbearing 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 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.

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.

RRP Survey: A limited scope lead-based paint (LBP) investigation to identify the presence of LBP in specific building components of the dwelling that are pending renovation. It is not the intent of the RRP Survey to provide a Full Home Lead-Based Paint Inspection or Risk Assessment. The intent of the RRP Survey to provide

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enough information for the contractor to determine if the specific building components that are subject to renovation and paint disturbance contain LBP. An RRP Survey includes only the specific building components that the contractor directed to test and are specifically contained in the report.

Soil: See **Bare soil**.

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**.

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**.

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: Apparent Lead Concentration–Substrate Equivalent Lead = Corrected Lead Concentration. See also **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.

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

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.

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.

Trough: See **Window trough**.

Windowsill: See **Interior windowsill**.

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

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.

XRF analyzer: An instrument that determines lead concentration in milligrams per square centimeter (mg/cm²) using the principle of x-ray fluorescence (XRF). Two types of field portable XRF analyzers are used — direct readers and spectrum analyzers. For this lead-based paint inspection, the term XRF analyzer only refers to portable instruments manufactured to analyze paint, that have a HUD Performance Characteristic Sheet, and are interpreted in accordance with the Performance Characteristic Sheet; it does not refer here to laboratory grade units or portable instruments designed to analyze soil.

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